Aug. 18, 1931. W. C. MOORE 1,819,688

FUEL AND SPEED CONTROL DEVICE

Filed June 13, 1929

FIG 1

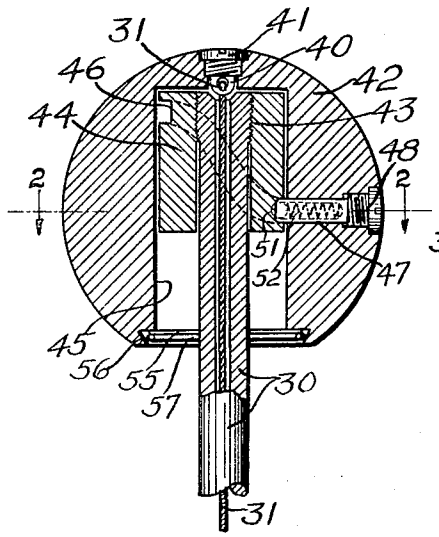


FIG 2

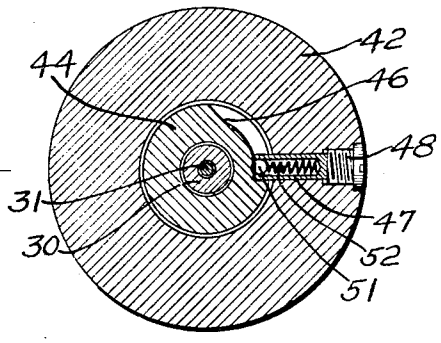


FIG 3

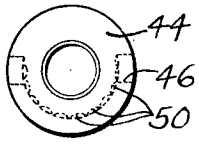


FIG 5

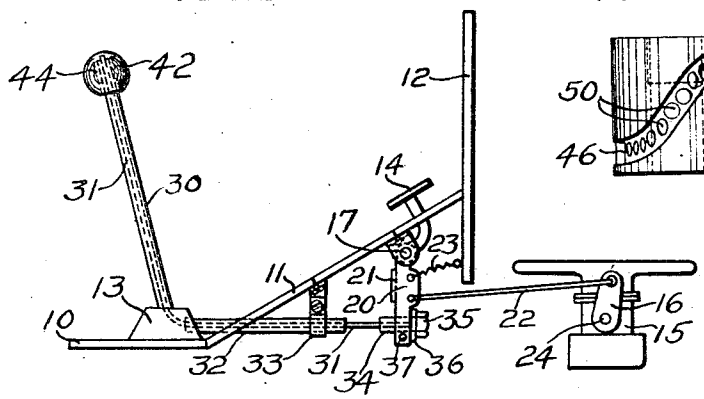


FIG 4

FIG 6

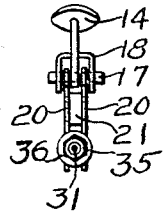
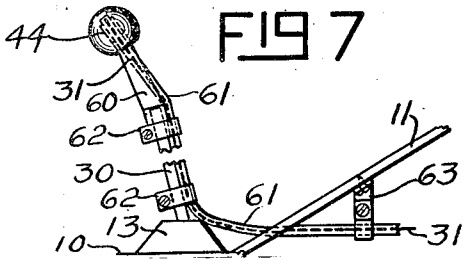


FIG 7



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Patented Aug. 18, 1931 1,819,688

UNITED STATES PATENT OFFICE

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FUEL AND SPEED CONTROL DEVICE

Application filed June 13, 1929. Serial No. 370,710.

This invention relates to improvements in fuel and speed control devices for motor, and other self-propelled vehicles.

One object of this invention is to provide novel means, connected to a control member of gas-operated engines, to control the feed of fuel into such engines.

Another object is to provide a novel means of acceleration for motor, and other self-propelled vehicles by the use of a throttle operating device on the control lever.

Another object is to provide a novel "gear-shift ball" or handle having a throttle control device therein to control the supply of fuel to the carburetor of gas-propelled vehicles, to increase and decrease the engine speed.

Another object is the provision of a hollow gear-shift lever with a control rod therein, operated to actuate the carburetor valve, through the agency of a raising and lowering device for the rod, which raising and lowering device is enclosed in the gear-shift ball or handle.

Another object is to provide a fuel and speed control cable or rod attached to the gear-shift ball, and means co-operating with the ball, whereby, upon turning the ball, the cable or rod is shifted, to control the supply of fuel to a carburetor of a gas-operated vehicle to control the engine speed.

Still another object of this invention is the provision of a cam device arranged inside the gear-shift lever ball or handle, to raise the ball or handle to determine the supply of fuel to the carburetor.

A still further object is to provide the gear-shift lever ball with a pilot screw or stud to cooperate with a cam device, whereby upon turning the ball the pilot, under control of the cam device, raises and lowers the ball to increase and decrease the supply of fuel, causing acceleration and deceleration, respectively, of the engine of the vehicle to which the same is attached.

A further specific object is the provision of seats in the cam race to retain the gear-shift lever ball in any position desired, to maintain a constant flow of fuel to the carburetor.

With these and incidental objects in view, the invention consists of certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and preferred and modified forms of embodiment of which are hereinafter described with reference to the drawings which accompany and form part of this specification.

Of said drawings:

Fig. 1 is a vertical sectional view of one, and the preferred form of fuel and speed control device, a portion of the gear-shift lever being shown in full lines.

Fig. 2 is a cross sectional view on line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a detail top view of the cam, or raising and lowering device which is attached to the gear-shift lever to raise and lower the ball or handle of said lever to control the fuel supply to the carburetor.

Fig. 4 is an elevation of the same device.

Fig. 5 is a general view showing a conventional form of carburetor, foot accelerator, gear-shift lever and connections between the ball on said lever and the carburetor fuel-valve control lever.

Fig. 6 is a detail of a part of the connection between the control cable and the foot accelerator lever.

Fig. 7 is a modified form of the invention, wherein the fuel and speed control device is within the gear-shift lever ball arranged on a gear-shift lever "extension" and the control cable is attached to the outside of the gear-shift lever, in lieu of being on the inside thereof.

General description

The invention is shown applied to an automobile, but it is to be understood that my invention is not limited to gas-driven vehicles.

In the preferred form I have shown my fuel and speed control device as adapted to be controlled by turning the gear-shift lever ball or handle, but I do not wish to be limited to the specific form illustrated, as the invention is susceptible of being made in various forms,

all coming within the scope of the claims which follow the specific description.

Obviously, the fuel and speed control device, using my specific form as the teacher, could be attached to other parts of the gear-shift lever, and could be attached in other manners, in lieu of being arranged inside the ball and lever. Fig. 7 shows one modification of the control cable or rod location and attachment.

As a matter of fact, my invention is susceptible of use on the control lever or "joy-stick" of aeroplanes, and is especially useful therein when "taking off" and "landing". In some of the present day aeroplanes the fuel and speed control member is on the dash, and the pilot must reach forwardly to operate the same, whereas, with my invention in use on an aeroplane, the pilot is enabled to control the altitude and engine speed with one hand, leaving the other hand free to be used as the occasion requires.

My invention provides a means of acceleration and de-celeration of engine speeds. In the form shown in the drawings, it is attached to the gear-shift lever of an automotive vehicle. The novel device overcomes difficulties encountered in controlling engine speeds on hills, garage ramps, or in heavy traffic, where the operator, of necessity, must use both feet, one on the clutch pedal and one on the brake pedal, and at the same time, one hand must be on the steering wheel and the other on the gear-shift lever so that he may be ready to instantly shift gears when necessary.

My device is, therefore, so designed and arranged that by merely turning the gear-shift ball a half turn the supply of fuel to the carburetor can be instantly changed to meet the necessary requirements to feed the proper amount of fuel into the carburetor to increase the engine speed to prevent "stalling" of the motor, especially when on hills.

Moreover, my invention will prevent accidents on hills where it becomes necessary for the operator to suddenly shift gears, by preventing him from "stalling" the motor, in which case he would have to start up from a standstill, and it not infrequently occurs that the car will begin to "back down hill" and should there be another car close, as is often the case, an accident may happen. But with my invention applied to a car, the operator could prevent any such "stalling" by merely turning the gear-shift ball, thus instantly feeding more fuel to the carburetor and simultaneously speeding up the engine.

Preferred forms as illustrated

Referring particularly to Fig. 5, which shows generally how my invention may be applied to an automobile, there is here shown, the floor-boards 10 and 11, dash 12, a housing for the gear-shift mechanism 13, foot accelerator 14, and a conventional form of carburetor 15 with its fuel-valve control lever 16.

The foot accelerator 14 is herein shown secured to a shaft 17 mounted in a U-shaped bracket 18 (see also Fig. 6) secured to the floor-board 11 by screws, only one screw being shown. Also secured to the shaft 17 is a pair of arms 20 connected by a stiffening bail 21. A rod 22 connects the valve control lever 16 with one of the arms 20. A spring 23 maintains the valve control lever 16 in its normal position, whereby the supply of fuel is cut to a minimum, allowing just enough fuel to pass into the carburetor to permit the engine to run "idle".

The spring 23 also restores the foot accelerator 14, arms 20 and valve control lever 16 to normal positions when the operator releases the foot accelerator 14.

As is well known in this art, a depression of the foot accelerator 14 rocks the arms 20 clockwise, which, through the rod 22, rocks the fuel-valve control lever 16 counter-clockwise on its pivot 24, thus opening the valve to increase the speed of the engine (not shown).

The gear-shift lever 30, in the preferred form, is hollow (Fig. 1), instead of being a solid rod to receive a fuel control cable 31. This cable 31 runs through the housing 13, thence through a tube 32, one end of which may be supported by being entered into the housing 13, the other end being supported by a bracket or strap 33 secured to the floor-board 11. At its lower end, the cable 31 has secured thereto a short sleeve 34 projecting between the lower ends of the arms 20. The sleeve 34 is threaded to receive a nut 35, and a washer 36 is placed over the sleeve 34 between the nut 35 and the arms 20 so that a movement of the cable 31, to the left, as viewed in Fig. 5, by means to be hereinafter described, rocks the arms 20 clockwise to cause a movement of the fuel-valve control lever 16 to open the valve of the carburetor, whereby the engine speed may be increased. A pin 37 holds the sleeve 34, washer 36 and nut 35, thus preventing them from dropping.

The upper end of the cable 31 is connected to a lip 40 of a screw 41 in the top of the gear-shift ball or handle 42.

The upper end of the gear-shift lever 30 is threaded, as at 43, upon which a cylindrical sleeve 44 (Figs. 1, 2 and 4) is fastened so that it cannot turn thereon. The ball or handle 42 has an opening 45 to receive the sleeve 44. This sleeve 44 has a substantially spiral cam race 46 into which projects a pilot 47 of a screw 48 threaded into the side of the gear-shift ball or handle 42.

Assuming the parts to be in the positions as shown in Fig. 1, the configuration of the race 46 is such, that by turning the ball 42, the sleeve 44 being stationary on the gear-shift lever 30, the ball 42 is raised, whereby,

through the screw 41, the cable 31 is raised, thus rocking the arms 20 clockwise and operating the fuel-valve control lever 16 to open the valve of the carburetor 15, whereupon the engine speed is increased. The race 46 is so formed that upon a half turn of the ball 42 the carburetor valve is fully opened. Upon turning the ball 42 back to its normal position, the race 46 causes the ball 42 to lower, as said ball is being turned, whereupon the spring 23, having been tensioned as the cable 31 was raised, causes the arms 20 to follow, and remain in contact with the washer 36, thus rocking the valve control lever 16 clockwise to close the carburetor valve to decrease the engine speed.

In order to provide a retaining means, whereby the ball or handle 42 may be maintained in any of its several possible positions of adjustment, the bottom of the race is provided with a series of recesses or seats 50 (Figs. 3 and 4) with which cooperates a ball 51 in the end of the pilot 47 of the screw 48. The pilot is hollowed out to accommodate the ball 51 and a spring 52, which latter maintains a constant pressure on the ball 51 to retain the gear-shift lever ball 42, the cable 31, arms 20, rod 22 and valve control lever 16 in any of their possible and various positions of adjustment to maintain a constant flow of fuel to the carburetor, thus holding the engine at an even speed.

To prevent dust and other foreign matter from entering the opening 45 (Fig. 1) in the ball 42, a washer 55, slipped over the gear-shift lever 30, is held in a recess 56 in the ball 42, by a C-shaped spring 57.

Modification

As previously stated, Fig. 7 shows one modification, illustrating another means of attaching the cable 31, shown in this Fig. 7 by the heavy dotted line.

As here shown, the gear-shift lever 30 is not hollow, and there is shown attached to the top thereof a gear-shift lever "extension" 60 having the cam sleeve 44 fixed to the gear-shift lever extension 30 as illustrated in Fig. 1.

The "extension" 60 is bored out to receive a flexible tube 61 having therein the control cable 31. The tube 61 is attached to the gear-shift lever 30 by clamps 62, and to the floor-board 11 by a bracket or strap 63 like the previously described strap 33. The connections from the cable 31 to the carburetor valve control lever 16 are not shown in Fig. 7 as such connections may be identical with those shown in Fig. 5.

The shifting of the lever 30, in the preferred or the modified forms shown, to "change gears" does not in any way affect the cable 31. Such shifting does not effect any shifting of the cable 31 to change the setting of the fuel-valve control lever 16 or the ball 42, as the cable 31 is flexible enough to take the slight bends occasioned by such shifting of the lever 30.

Operation

A brief description of the operation of the device will now be given.

Assuming the parts to be in the positions shown in Fig. 1, to increase the speed of the engine, all the operator need do is to turn the gear-shift lever ball or handle 42 to the left, and the cam race 46 causes the ball 42 to raise, thus drawing upwardly upon the cable 31, which, in turn, through its connection to the arms 20, rocks said arms clockwise whereupon the rod 22 rocks the fuel-valve control lever 16 counter-clockwise on its pivot 24 to open the carburetor valve to allow more fuel to pass into the carburetor to increase the speed of the engine.

Upon turning the ball 42 back to its normal position, the cam race 46 causes the ball 42 to lower, thus forcing the cable 31 downwardly, and the spring 23 then rocks the arms 20 counter-clockwise to close the carburetor valve.

The foot accelerator 14 can be operated independently of the cable, because of the loose connection between the arms 20 and the cable 31.

While the form of mechanism herein shown is admirably adapted to perform the functions stated, it is understood that the invention is not limited to the form shown, for it is suceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. In a fuel and speed control device for automotive vehicles, the combination of a carburetor; a fuel-valve control lever thereon; a hollow gear-shift lever; a hollow handle thereon, adapted to be turned and shifted relatively thereto; connections intermediate the handle and control lever, said connections including a flexible rod running through the gear-shift lever and into the handle; means, including a screw having a lip within the handle to which the rod is secured; a sleeve rigid with the gear-shift lever, said sleeve having a substantially spiral cam race; and a pilot secured to the handle and cooperating with the cam race in said sleeve to raise the handle as the latter is turned in one direction, and to lower the handle as the same is turned in another direction, whereby the connections are shifted to actuate the fuel-valve control lever to control the amount of fuel that is to pass into the carburetor.

2. In a fuel and speed control device for automotive vehicles, the combination of a carburetor; a fuel-valve control lever thereon; a gear-shift lever; a hollow handle thereon, adapted to be turned and shifted relative-

ly thereto; connections intermediate said handle and said fuel-valve control lever, said connections including a flexible rod projecting from the handle; means within the handle to which the rod is attached; a cam device within the handle; a pilot secured to the handle and coperating with the cam device, whereby, as the handle is turned the cam device raises the handle to adjust the fuel-valve control lever; and retaining means to maintain the handle, the connections and the fuel-valve control lever in any of their various positions of adjustment.

3. In a fuel and speed control device for automotive vehicles, the combination of a carburetor; a fuel-valve control lever thereon; a gear-shift lever; a hollow handle thereon, adapted to be turned and shifted relatively thereto; connections intermediate the handle and the fuel-valve control lever, said connections including a flexible rod projecting from the handle; means within the handle to which the rod is attached; a cam device within the handle; a pilot secured to the handle and cooperating with the cam device, whereby, as the handle is turned the cam device shifts the handle to adjust the fuel-valve control lever; means projecting from the end of the pilot; seats in the cam device; and means to resiliently maintain the projecting means in any of said seats, thus retaining the handle, the fuel-valve control lever and said connections in any of their positions of adjustment to maintain a constant flow of fuel into the carburetor.

4. In a fuel and speed control device for automotive vehicles, the combination of a carburetor; a fuel-valve control lever; a gear-shift lever; a handle thereon, adapted to be shifted relatively thereto; connections intermediate said handle and said fuel-valve control lever, said connections including a flexible rod projecting from the handle; means within the handle to which the rod is attached; a cam device within the handle; a pilot cooperating with the cam device, whereby, as the handle is shifted the cam device moves the flexible rod to adjust the fuel-valve control lever; and retaining means to maintain the handle, the connections and the fuel-valve control lever in any of their various positions of adjustment.

In testimony whereof I affix my signature.

WILLARD C. MOORE.