July 7, 1931. W. J. WHITE 1,813,719

ELECTRICALLY OPERATED FUEL CONTROL

Filed March 3, 1930 2 Sheets-Sheet 1

Fig. 1.

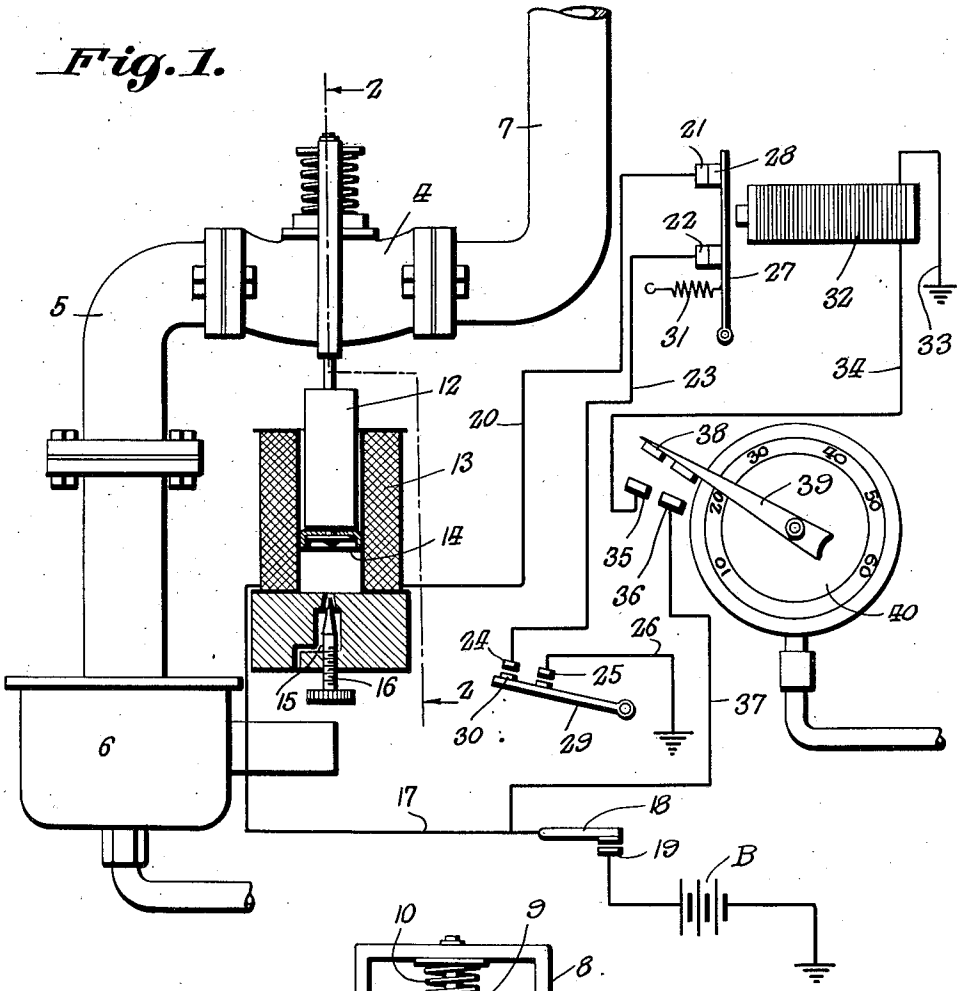
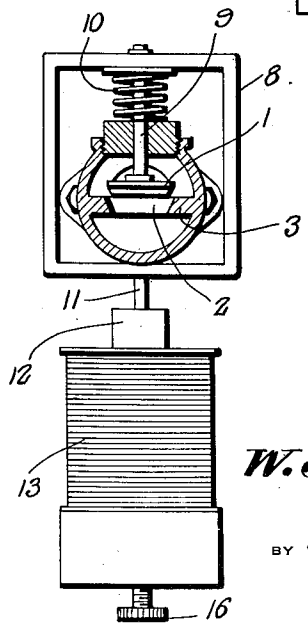


Fig. 2.



W. J. White,
INVENTOR

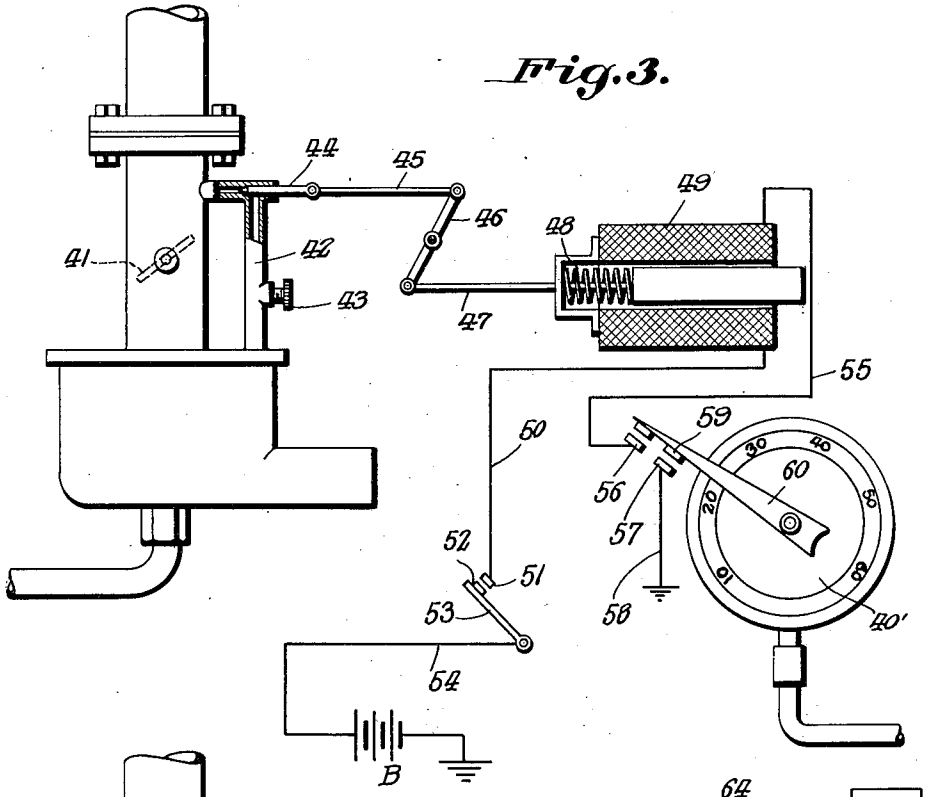
BY Victor J. Evans
ATTORNEY

July 7, 1931. W. J. WHITE 1,813,719

ELECTRICALLY OPERATED FUEL CONTROL

Filed March 3, 1930 2 Sheets-Sheet 2

Fig. 3.



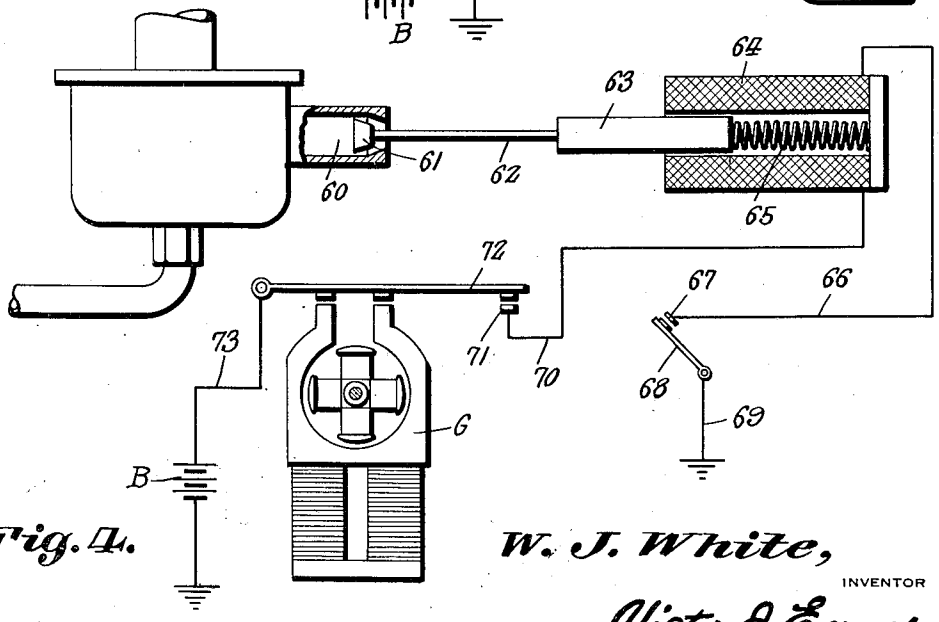


Fig. 4.

W. J. White,
INVENTOR

BY Victor J. Evans
ATTORNEY

Patented July 7, 1931

1,813,719

UNITED STATES PATENT OFFICE

WILFRED JONES WHITE, OF TAMPA, FLORIDA

ELECTRICALLY OPERATED FUEL CONTROL

Application filed March 3, 1930. Serial No. 432,826.

This invention relates to means for controlling the flow of fuel to the cylinders of a motor of a vehicle, the general object of the invention being to provide means for stopping the flow of mixture to the cylinders as soon as the accelerator is released so that the movement of the pistons will not draw fuel into the cylinders, with means for automatically permitting mixture to again flow to the cylinders when the engine reaches idling speed, thus preventing the stoppage of the engine altogether.

This invention will reduce the consumption of fuel, prevent crankcase dilution and generally increase the efficiency of the engine.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a diagrammatic view showing one form of the invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a diagrammatic view showing another form of the invention.

Figure 4 is a diagrammatic view of still another form of the invention.

Referring to Figures 1 and 2, the numeral 1 indicates a valve for controlling a port 2 located in a partition 3 which divides the valve casing 4 into two parts, one part being connected by a pipe 5 with the carburetor 6 and the other part being connected by a pipe 7 with the inlet manifold of the engine. A frame 8 encircles the valve casing and has its upper part connected to the stem 9 of the valve, a spring 10 being arranged between said upper part of the frame and the casing for normally holding the parts with the valve in open position, as shown in Figure 2. The lower part of the frame is connected by a rod 11 with the core 12 of a solenoid 13, the core having a cup washer 14 on its lower end which engages the inner walls of the solenoid and acts as a piston to compress the air in the lower part of the circular chamber formed by the solenoid. A small passage 15 connects this chamber with the atmosphere and the size of a part of the passage is regulated by a needle valve 16. One end of the winding of the solenoid is connected by a conductor 17 with the dash switch 18, the terminal 19 of which is connected with the battery B. The other end of the winding of the solenoid is connected by a conductor 20 with a terminal 21 and a terminal 22 is connected by a conductor 23 with a terminal 24. A terminal 25 is connected to ground by a conductor 26.

A switch member 27 has a pair of contacts 28 thereon for bridging the contacts 21 and 22 and a switch member 29 connected with the accelerator carries a pair of contacts 30 for bridging the contacts 24 and 25. A spring 31 normally holds the switch member 27 with its contacts bridging the terminals 21 and 22, but this switch member is moved to circuit breaking position by a solenoid 32, one end of the winding of which is grounded, as at 23, and the other is connected by a conductor 34 with a terminal 35 associated with the terminal 36 which is connected by a conductor 37 with the conductor 17. These terminals 35 and 36 are adapted to be bridged by the contacts 38 on an arm 39 which forms part of the oil gauge 40 so that when the oil pressure is low, the arm 39 will move to a position where its contacts 38 will engage the terminals 35 and 36 and thus complete the circuit to the solenoid 32, to cause said solenoid to attract the member 27 and thus break the circuit to the solenoid 13.

From the foregoing it will be seen that when the switch 18 is closed and the accelerator depressed, the circuit to the solenoid 13 will be broken by the member 29 being out of engagement with the terminals 24 and 25 so that the valve 1 will be held in open position by its spring 10. Thus the

motor will operate in the ordinary manner. As soon as the foot is removed from the accelerator, however, the member 29 will bridge the contacts 24 and 25 so that current will flow to the solenoid 13 and thus the armature 12 will be lowered to close the valve 1, which will prevent any mixture from passing to the cylinders so that the moving pistons will not draw any fuel into the cylinders. However, as soon as the engine reaches idling speed, the lessened pressure in the oil gauge will cause the arm 39 to move to a position where its contacts 38 will bridge the terminals 35 and 36 so that current will flow to the solenoid 32 which will cause the member 27 to move its contacts 28 out of engagement with the contacts 21 and 22 and thus break the circuit to the solenoid 13 so that the valve 1 will open, thus permitting the engine to receive fuel so that the engine will not stop entirely.

In the modification shown in Figure 3, the throttle valve 41 will entirely close communication between the carbureter and the cylinders when said valve is closed, but a by-pass 42 connects the carbureter with the intake above the valve so that some gas will pass from the carbureter through the by-pass to the cylinders when the valve is closed. The flow of mixture through the by-pass can be regulated by a needle valve 43 and said by-pass is normally held closed by a needle valve 44 connected by a link 45 with a lever 46 which in turn is connected by a link 47 with a spring pressed armature 48 of a solenoid 49, the spring of the solenoid holding the parts with the valve 44 closed. One winding of the solenoid is connected by a conductor 50 with a contact 51 engaged by a contact 52 on an arm 53 which is connected with the accelerator and this arm is connected by a conductor 54 with the battery B. The other end of the winding of the solenoid is connected by a conductor 55 with a contact 56, the companion contact 57 being grounded, as shown at 58. These contacts 56 and 57 are adapted to be bridged by the contacts 59 on the arm 60 of the oil gauge 40′. In this form of the invention, when the accelerator is released, the valve 41 closes and thus the flow of the mixture to the cylinders ceases, but when the speed of the motor is reduced to idling speed, the contacts 59 on the oil gauge or arm 60 will bridge the contacts 56 and 57, so that current will flow from the battery over conductor 54, through contacts 51 and 52 and conductor 50 to the solenoid 49 and from the solenoid the current will flow over conductor 55 through the contacts 56, 57 and 59 and be grounded at 58. Thus the solenoid 49 will be energized so that its core 48 will move the parts 45, 46 and 47 to a position to open the valve 44 and thus permit some of the mixture to pass from the carbureter through the by-pass 42 into the cylinders. This will keep the engine from stopping but permit to run at idling speed. When the accelerator is again depressed, the circuit will be broken at the contacts 51 and 52 so that the solenoid will be de-energized and the valve 44 will be closed.

In the modification shown in Figure 4, the air inlet 60 of the carbureter is controlled by a valve 61, the stem 62 of which is connected to the core 63 of the solenoid 64, the core being normally held in a position with the valve open by a spring 65. The end of one winding of the solenoid is connected by a conductor 66 with the contact 67 which is adapted to be engaged by a contact on the arm 68 connected with the accelerator, said arm being grounded, as shown at 69. The other end of the solenoid winding is connected by a conductor 70 with a contact 71 adapted to be engaged by a contact on a lever 72 which is connected by a conductor 73 to the battery B. This lever is moved to a position to cause its contact to engage the contact 71, when the generator G is operating above idling speed of the engine. Thus when the accelerator is released, the circuit to the solenoid 64 is closed by the contact on the arm 68 engaging the contact 67 so that the movement of the core 63 will close the valve 61 and thus no mixture will pass to the cylinder. When the engine slows up, the resultant slowing up of the generator will release the lever 72 so that the circuit will be broken at the contact 71 and thus the solenoid will be de-energized and the spring 65 will open the valve 61 and thus permit sufficient mixture to pass to the engine to prevent the same from stopping.

From the foregoing it will be seen that in all the different forms of the invention, the flow of mixture to the cylinders is entirely cut off when the accelerator is released, but as the engine slows up, the invention is rendered inactive so that the flow of mixture to the engine is permitted, which permits the engine to run at low speed and prevents it from stopping entirely. As before stated, this invention not only acts as a gas saver, but it also prevents dilution of the oil in the crank case and also acts to check the speed of the engine more readily than it would be checked if the mixture continued to flow to the engine.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. In combination with a motor, electri-

cally operated means for cutting off the flow of mixture to the cylinders when the accelerator or throttle is moved to closing position, and means for automatically rendering such means inactive when the engine reaches idling speed.

2. In combination with a motor, electrically operated means for cutting off the flow of mixture to the cylinders when the accelerator or throttle is moved to closing position, means for automatically rendering such means inactive when the engine reaches idling speed, such means including a switch located in the circuit of the electric means and means whereby said switch is operated when the engine reaches idling speed.

In testimony whereof I affix my signature.

WILFRED J. WHITE.