Feb. 14, 1933. J. BELLIS 1,897,357

GAS CONTROL MECHANISM FOR AUTOMOBILES

Filed Aug. 16, 1929

Fig. 1.

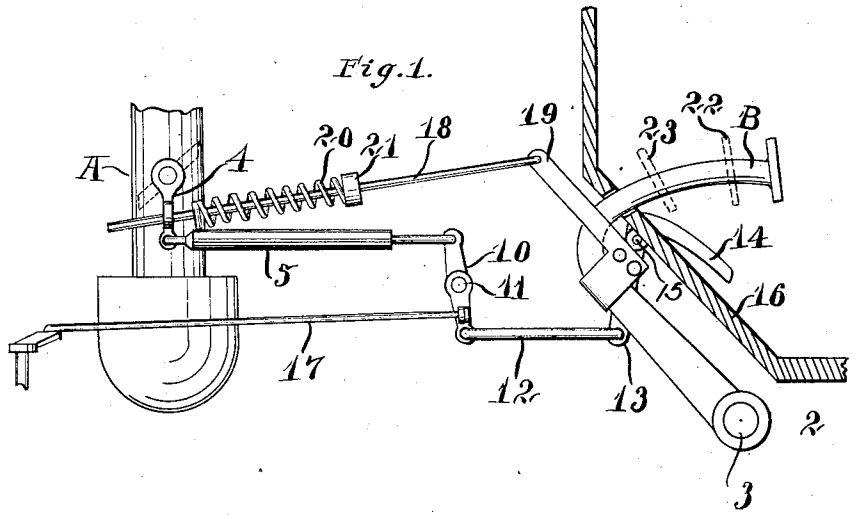
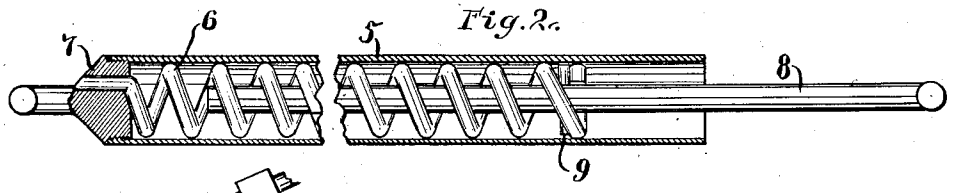


Fig. 2.



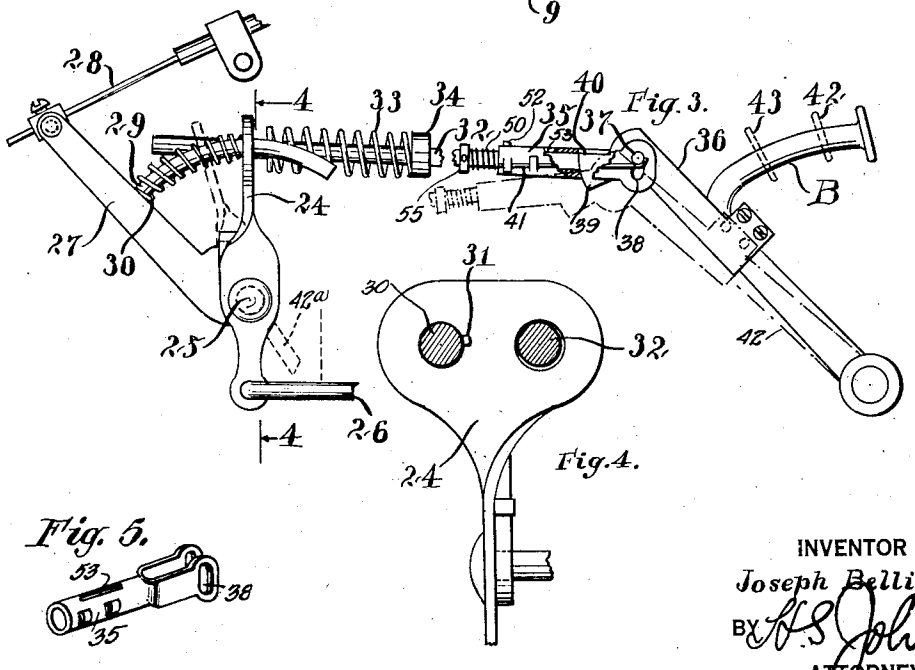


Fig. 3.

Fig. 4.

Fig. 5.

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GAS CONTROL MECHANISM FOR AUTOMOBILES

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My invention relates to improvements in gasoline acceleration control mechanism for automobiles.

An object of my invention is to provide means controlled by the clutch or foot brake lever to shut off the accelerated supply of gas feed without changing the position of the hand control.

A further object of my invention is to provide means to accelerate the gasoline supply and motor speed from a normal, idling position, to a predetermined fixed speed position, through the actuation of the clutch or brake mechanism.

These and other features of my invention will be more specifically described in the following specification and accompanying drawing, wherein:

Figure 1 is a view in side elevation of the carburetor mechanism and brake and clutch levers of an automobile.

Figure 2 is a view in longitudinal section through a connecting rod and housing forming part of my invention.

Figure 3 is a view in side elevation of my improved mechanism, shown partly broken away and illustrating means permitting the mechanism being actuated to accelerate, through the clutch or brake mechanism.

Figure 4 is a view showing a section on line 4—4 of Figure 3; and

Figure 5 is a view in perspective of a sleeve and yoke mounted on a carburetor control rod embodied in the construction shown in Figures 3 and 4.

In the ordinary automobile there is a foot throttle connected with the carburetor for controlling the gas feed, and also a hand lever connected to the carburetor for similarly controlling the feed by hand manipulation. In some automobiles the hand lever is supported in connection with the steering wheel and with some a pull rod is supported in the dashboard. The construction shown in Figures 1 and 2 is particularly designed for those constructions wherein there is a gasoline control lever in connection with the steering wheel, and the construction shown in Figures 3 and 4 wherein a pull rod is used supported in the dashboard for the hand manipulation.

Referring to Figure 1, A represents the carburetor mechanism, and B the clutch or foot brake, as the case may be, the clutch or foot brake having pivotal support 3 underneath the body 2 of the car.

In carrying out my invention in the manner shown in Figure 1, the lever arm 4 is connected at one end to the butterfly valve of the carburetor, shown in dotted lines in Figure 1. The lower end of the arm 4 pivotally supports one end of a tube 5. Within the tube 5 is arranged a coil spring 6 supported in the head 7 constituting the pivotally supported end of the tube, the opposite end of the tube being open. One end of a rod 8 extends into the spring 6 and is locked therein by a pin 9. The other end of the rod has pivotal connection to the upper end of a lever arm 10. The lever arm 10 has central pivotal support 11 and is connected at its lower end by a link 12 with a downwardly projecting arm 13 of the foot accelerator 14, the foot accelerator having pivotal support 15 upon the foot board 16 of the car. A rod 17 also connects the lower end of the lever arm 10, through intermediate mechanism, not shown, to the ordinary hand actuated lever, not shown, carried by the steering wheel for controlling the flow of gas to the motor.

For the purpose of actuating the lever arm 4 from hand lever or foot brake, as the case may be, I provide a rod 18 slidable at its outer end through the lever 4 and having pivotal connection at its opposite end with an arm 19 extending upwardly from that portion of the clutch release or foot brake lever standing underneath the foot boards. Surrounding the rod 18, adjacent the arm 14, is a coil spring 20 connected with a collar 21 secured upon the rod 18.

In Figure 1 the parts are shown in normal driving position. In this position of the parts, the carburetor valve has been set for the desired driving speed by turning the hand control lever on the wheel the desired degree, and, through the intermediate mechanism, turning the lever 10 upon its pivot 11 to pull upon the rod 8 and through the spring 6 and connected sleeve 5 turn the arm 4 for the desired gas flow.

With the position of the parts shown in Figure 1, the springs 20 are spaced from the arm 4. When the clutch or brake lever B is pressed upon by the foot to carry it to the dotted line position shown at 22, the rod 18 will be moved sufficiently to carry the spring 20 into contact with the lever arm 4. The continued movement of the lever arm B to the dotted line position shown at 23 will bring the spring 20 into contact with the lever arm 4 and turn the lever arm 4 upon its pivot to turn the carburetor valve to shut off the gas to feed for idling speed. As will be apparent, this turning of the lever arm 4 exerts a pull upon the sleeve 5, and that pull, in connection with the sleeve 5 and rod 8, is compensated for by the stretching of the spring 6 to the position shown in Figure 2. The normal position of the spring 6 and rod 8 is with the end of the rod 8 contacting with the head 7 of the sleeve. This spring 6 is so regulated in tension that it may stretch to the position shown in Figure 2 to lengthen out the combination of sleeve 5 and rod 8 without turning the lever arm 10 and connections from said lever arm to the hand throttle upon the wheel. When the pressure is released upon the foot lever B so that the foot lever returns to the position shown in solid lines, carrying the springs 20 away from the lever arm 4, the spring 6 will act to pull the lever arm 4 back to the position shown in solid lines.

In the construction shown in Figure 3, I show the mechanism adapted for use in connection with a hand actuated push rod support upon the dashboard, in substitution for a hand actuated lever supported upon the steering wheel, and also show means for restoring the carburetor valve to its set position before the lever B has been returned to a full normal position.

In the construction shown in Figures 3 and 4, an arm 24 is connected at 25 with the butterfly valve of the carburetor, and at its lower end connected by a rod 26 with the foot accelerator, not shown. An arm 27 has pivotal support alongside the arm 24 at its lower end and at its upper end connects with the push rod 28, which extends through the dashboard, for manual operation. A curved arm 29 is supported by the lever arm 27 and extends through an opening in the upwardly extending projecting end of the arm 24. A spring 30 surrounds the arm 29 intermediate of the lever arm 27 in the upper end of the arm 24. The arm 29 upon the opposite side of the upper end of the arm 24 is formed with a lug 31 to engage with the upper end of the arm 24 in the operation of the device. For the purpose of actuating the carburetor valve from the lever B, I provide the following mechanism:

A rod 32 passes slidably through the upper end of the arm 24, a spring 33 encircling the rod adjacent to the upper end of the arm 24, and being connected with a collar 34 secured upon the rod. The opposite end of the rod supports a sleeve 35 and is secured therein by means of a pin 52 carried by the rod 32. This pin 52 rides in a longitudinally disposed slot 53 in the sleeve 35. The sleeve 35 has a slotted pivotal connection with the upper end of an arm 36 carried by the foot lever B underneath the dashboard. The above referred to pin and slot connection is brought about by a pin 37 carried by the arm 36 and extends through a substantially vertical slot 38 in the end of the sleeve 35. The arm 36 at its upper end carries a cam 39 which fits into a slot 40 in the end of the sleeve 35 in the operation of the device. The pin 37 and rod 38 are held in the relation shown by means of a spring 41 supported upon the side of the sleeve 35 at one end and at its other end engages with the pin 37. A light coil spring 50 encircles the rod 32 and is held in compression against the end of the sleeve 35 by means of a collar 55 to exert an outward pressure on the rod 32.

The operation of the structure illustrated in Figures 3 and 4 is as follows:

In Figure 3 the solid lines show the clutch pedal B in the position it occupies when the clutch is engaged, namely, in its upward position. The hand throttle in this solid line illustration is adjusted to open the carburetor valve to an adjusted position which will give the driver the speed which he desires. It will be noted in this solid line illustration, that the spring 33 is not in engagement with the arm 24 and that the spring 30 is holding the arm 24 against the pin 31. This is the normal position for these parts 30, 24, and 31, except when moved from such position by the spring 33, as hereinafter described.

The rod 32 is shown in engagement with the outer curved surface of the cam 40 which is an integral part of the extension arm 36 which is securely fastened to the clutch pedal B. Upon depressing the pedal B to the position indicated by the dotted lines, generally referred to by the numeral 42, the cam 40 will be moved downwardly through the sleeve 35 to clear the end of the rod 32, and, during this movement, the springs 33 will engage the arm 24. The spring 50 will be compressed by the pressure of the spring 33 against the arm 24 in resistance to the spring 30, the spring 50 being considerably weaker than either the spring 33 or the spring 30, the spring 30 in turn being weaker than the spring 33. This pressure on the rod 32 will depress the spring 50, moving the rod 32 rearwardly to rest against the rounded upper end of the extension arm 36. This movement of the rod 32 will tend to open the carburetor slightly, but continued pressure on the foot pedal B to the position 43 to release the clutch will close the carburetor by moving it in the direction of the dotted lines 42*a* to a fully

closed position. The throttle will remain closed as long as the clutch pedal B is held in the depressed position shown by dotted line 43.

Upon releasing the clutch pedal, as the pedal is raised to the dotted line position 42 by means of the clutch pedal spring, not shown, of the conventional type, the upper side of the cam 40 will engage the lower side of the rod 32. For this purpose the pin and slot connection 37 and 38 has been provided to permit a relative upward movement of the sleeve 35 with respect to the cam 40 until the pressure of the spring 33 against the arm 24 is relieved. As the spring 33 is released from pressure against the arm 24, the lighter spring 50 forces the rod 32 outwardly to clear the end of the cam 40, whereupon the sleeve 35 will be moved downwardly by the spring 41 to the normal position shown in solid lines in Figure 3.

It is desirable to have this relative movement of the rod 32 and the sleeve 35 so that in releasing the clutch the carburetor will start to close before the clutch is fully released and in engaging the clutch the carburetor will start to open before the clutch is engaged, so as to accelerate the motor and thus assist in preventing stalling of the motor when engaging the clutch after the speed of the car has been materially slowed down.

By means of my construction I am able to overcome the objections that exist in connection with regulating the carburetor feed in driving a car through the ordinarily employed foot accelerator. While automobiles, in addition to a foot accelerator, have a hand control, as a lever associated with the steering wheel, or a push rod connected with the carburetor valve, the driving is ordinarily done by the foot accelerator on account of the inconvenience in manipulating the hand throttle, as in applying the brake and clutch in slowing down, going down hill, etc. There are many objections to this ordinary way of driving a car in that there is a certain vibration of the foot accelerator that opens and closes the valve that it is impossible to control by the foot, and, in using the clutch and brake in different operations of the car, there is the necessity of taking the foot off the foot accelerator and at certain times use the hand throttle.

With my invention I simply set the hand control for the desired speed. When I apply the brake or the clutch, or both, and need in connection with that to turn the carburetor to the position of idling, I am not compelled to adjust the hand control. The hand control stays in its set position, and, in the manner above set forth, the depressing of the clutch or foot brake, as the case may be, in itself shuts off the supply of gas to idling speed, and, as above described, during this idling speed the hand control stays set. When the foot lever is released, the carburetor valve is opened to accord with the set position of the hand control.

With the improvements shown in Figures 3 and 4, there is the added advantage over the construction shown in Figure 1, that the valve is opened before the foot lever becomes restored to normal position. In fact, it is opened as soon as the foot lever begins to leave the depressed position indicated by dotted lines at 43, so that as the foot lever gets back to its restored position, whether it be clutch or brake, the gas supply is on, adding to the smoothness of operation.

I claim:

1. In combination with a carburetor control valve and connected hand control and clutch pedal, a rod connected with said pedal, a spring supported by said rod in position to be moved into actuating relationship with the carburetor valve on the depressing of the pedal, a split connection between the hand control and carburetor valve, including a sleeve, and a slidable rod having a spring supported thereon whereby said spring will act to leave the hand control unaffected in the actuation of the pedal.

2. A carburetor control mechanism to be incorporated in an automobile having a foot pedal, comprising a carburetor having a control lever thereon and a manually adjustable carburetor control means, a lever carried by said foot pedal and slidably connected to said carburetor control lever, stop means carried thereon to engage said carburetor control lever upon a depression of said foot pedal to close said carburetor control valve, a resilient link connected between said manually adjustable lever and said carburetor valve and extensible upon closing of the carburetor valve by said foot pedal and associated mechanism without disturbing the adjustment of said manually adjustable means, said resilient link restoring said carburetor valve to the position determined by the manually adjustable means upon release of said foot pedal.

3. In combination with a carburetor control valve, a hand set control member, a foot pedal having operative connection to a portion of an automobile other than the carburetor, means actuated by a depression of said foot pedal to close said control valve, compensating means holding said hand set control member against displacement during a closing of said valve by operation of said foot pedal, and means releasing said carburetor control to a relatively slightly opened position with respect to said foot pedal during an operation thereof.

4. In combination with a carburetor control valve and connected adjustable hand control, and a clutch operating pedal; auxiliary valve control means actuated by a clutch releasing movement of said pedal to

close said valve and to leave said hand control in an adjusted position, and intermediate means operated by a movement of said pedal to advance the operative position of said auxiliary means with respect to said pedal.

5. In combination with a carburetor control valve, connected adjustable throttle, and a clutch operating pedal; auxiliary valve control means actuated by a clutch releasing movement of said pedal to close said valve and to leave said throttle in an adjusted position, and to return said valve to an adjusted position by a clutch engaging movement of said pedal, and means mounted to move relatively to said pedal after a clutch releasing movement thereof to advance the operative position of said auxiliary means with respect to said pedal prior to the return of said pedal to clutch engaging position.

6. The combination with a carburetor valve, having a connected adjustable throttle, a clutch pedal, and an auxiliary mechanism operable by said pedal to close said carburetor on a clutch releasing movement of said pedal, and to open said carburetor to a throttle adjusted position on a clutch engaging movement of said pedal; of means associated with said pedal and said auxiliary means to relatively advance the position of said auxiliary means with respect to said throttle after a clutch releasing movement of said pedal and prior to a clutch engaging movement thereof.

7. The combination with a carburetor valve having a connected adjustable throttle, a clutch pedal, and an auxiliary mechanism operable by said pedal to close said carburetor on a clutch releasing movement of said pedal, and to open said carburetor to a throttle adjusted position on a clutch engaging movement of said pedal; of cam means mounted on said pedal and normally engaging said auxiliary mechanism to hold said auxiliary mechanism in a predetermined position with respect to said pedal and releasable by an operative movement of said pedal to advance the relative position of said throttle with respect to the position of said pedal after a clutch releasing movement of said pedal and prior to a clutch engaging movement thereof.

In testimony whereof I affix my signature.

JOSEPH BELLIS.