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AUTOMATIC THROTTLE SHUT-OFF

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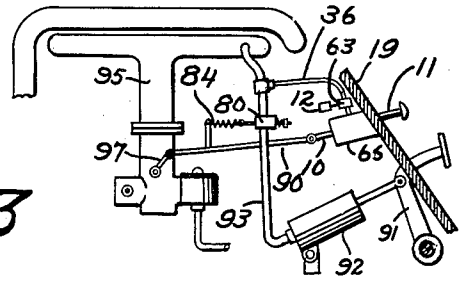


Fig. 3

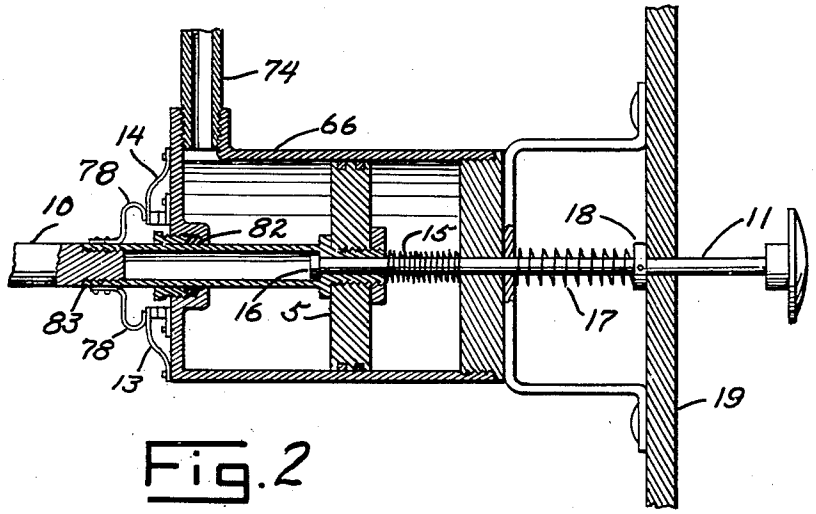


Fig. 2

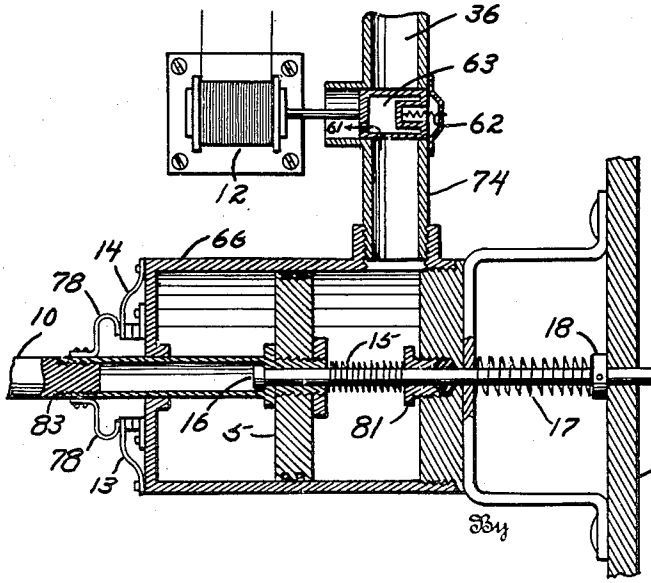


Fig. 1

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## AUTOMATIC THROTTLE SHUT-OFF

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Application May 12, 1932, Serial No. 610,845

1 Claim. (Cl. 192—.01)

The present invention relates to an improvement of a part of my invention of an automatic gear changing mechanism, and has for its principle object to provide automatic means for closing the throttle of the carburetor, disengaging the clutch, and making certain electrical circuits in a self propelled vehicle.

Referring now to the accompanying drawing which illustrates my improved device and in which like characters of reference indicate corresponding parts in each figure and to Figures 3 and 4 of my copending application resulting in Patent 1,911,599 of May 30, 1933 for an Automatic gear changing mechanism.

Figure 1 represents, diagrammatically and partly in section, one embodiment of the invention employing a vacuum as a means of operating the throttle shutoff.

Figure 2 represents, diagrammatically and partly in section, another embodiment of the invention employing compressed air as a means of operating the throttle shutoff.

Figure 3 shows an arrangement of the invention in combination with its associated parts.

The assembly in Figure 1 consists of the conventional mounting of a foot accelerator pedal and a throttle rod 11 through the floor boards 19, the foot throttle rod 11 being continued into the cylinder 66. A collar 18 is mounted on the rod 11, and a spring 17 acts against this collar keeping the foot throttle in closed position when no pressure is applied to the accelerator pedal.

A cylinder 66 is mounted to receive the rod 11 which passes through the packing box 81 on through the piston 5 to end in the collar 16. The end of the rod 11 and the collar 16 are free to move in the hollow end of the rod 10 which is attached to the piston 5. The rod 10 is continued to control the throttle rod 90 of the carburetor and also to an automatic clutch mechanism for disengaging and allowing the clutch to engage, such mechanism now being standard equipment on certain makes of automobiles. This automatic clutch mechanism disengages the clutch when pressure is released from the accelerator pedal, and closes the clutch when pressure is applied to the accelerator pedal.

The joint 83 is provided in the hollow tip of the rod 10 to provide means of the rod 11 being passed through the opening in the piston 5.

The rod 10 also controls the bar 78—78 which closes the switches 13 and 14. It is understood that closing of the switches 13 and 14 energizes the gear shifting mechanism as disclosed in my copending application above mentioned.

The cylinder 66 has a conduit 74 to the valve 63. The valve 63 has a small spring 62 to keep the valve closed. The valve 63 is opened by the solenoid 12, which is energized by operation of the governor when the speed of the vehicle reaches a predetermined rate. When the valve 63 is closed an opening 61 is made between the cylinder 66 and the atmospheric air so that there will be no vacuum in the cylinder. The conduit 36 from the valve 63 leads to a source of vacuum such as the intake manifold of an automobile.

By forcing the rod 11 into the hollow tip of the rod 10 when no current is flowing through the solenoid 12, the spring 15 is allowed to act against the piston 5 and is of sufficient strength to act vigorously against the piston 5 forcing the rod 10 out of the cylinder to open the carburetor throttle and to actuate the automatic clutch mechanism.

The spring 17 is of sufficient strength to overcome the spring 15, and when no force is acting on the accelerator pedal and the throttle rod 11, the spring 17 closes the carburetor throttle and provides means for disengaging the clutch by acting on the rod 10 through the collar 16, moving the rod 10 into the cylinder 66. The force applied by the spring 17 against the collar 18 moves the rod 11 from the cylinder 66. Moving of the rod 11 from the cylinder 66 allows the collar 16 to act on the piston 5 to move the rod 10 into the cylinder 66 and to close the switches 13 and 14 by means of the bar 78—78.

Fig. 3 shows a somewhat diagrammatic arrangement of the parts and illustrating the manner of operation wherein actuation of the accelerator rod 11 serves to create a suction on the pipe 36 and movement of the rod 10 so that the clutch pedal 91 will be in turn caused to operate. The movement of the accelerator pedal, therefore, causes complete operation of the accelerating and clutching mechanism. The clutch control cylinder is shown at 92 and the conduit leading to such cylinder at 93. The other parts indicated are: the manifold of the vehicle 95, the carburetor 96, and the carburetor control valve 97.

The principal objects of designing this automatic throttle shutoff are to provide means for closing the carburetor throttle automatically, and by the same means to close the throttle to operate an automatic mechanism for disengaging the clutch.

The various parts having been described briefly, the working of the mechanism is as follows: pressure is applied to the accelerator pedal and the rod 11 moves into the cylinder 66, while the collar 16 moves into the hollow end of the rod 10. The moving of the rod 11 into the hollow end of the rod 10 allows the spring 15 to act against the piston 5 moving the rod 10 out of the cylinder 66 and opening the switches 13 and 14, to cause shifting of the gears. Moving the rod 10 out of the cylinder 66 provides the neces-

sary direction of motion in the rod 10 to open the carburetor throttle and to actuate the automatic clutch mechanism. As the speed of the car increases the governor closes the circuit so that an electrical current is now being allowed to flow through the solenoid 12 and the valve 63 is opened. A vacuum is produced in the cylinder 66, which moves the piston 5, drawing the rod 10 back into the cylinder 66 which direction of motion of the rod 10 closes the carburetor throttle, provides means for disengaging the clutch through the automatic clutch mechanism to cause shifting of the gears. The electrical current through the solenoid 12 is broken as soon as the gears are shifted so that the valve 63 will be closed by the spring 62, and atmospheric pressure is allowed to enter the cylinder 66 by means of the conduit 74 through the opening 61 of the valve 63. The spring 15 then returns the piston 5 and the rod 10 to position against the collar 16.

*Use of compressed air for operating automatic throttle shutoff*

Referring now to Figure 2, in which the assembly is essentially the same as in Figure 1 with the exceptions that the conduit 74 is properly located to allow the compressed air to force the piston 5 into the cylinder 66, and the packing box 82 is located around the rod 10. The assembly in Figure 2 consists of the conventional mounting of the foot accelerator pedal and the throttle rod 11 through the floor boards 19. A collar 18 is mounted on the rod 11, and the spring 17 acts against this collar keeping the foot throttle rod 11 and the accelerator pedal in a closed position.

The cylinder 66 is mounted to receive the rod 11 which passes into the cylinder 66 through the piston 5 to the end in the collar 16. The end of the rod 11 and the collar 16 are free to move in the hollow end of the rod 10 which is attached to the piston 5. The rod 10 is continued to control the throttle lever of the carburetor and also the mechanism for dissengaging and allowing the clutch to engage, said mechanism now being standard equipment on certain makes of automobiles. This mechanism disengages the clutch when the throttle rod closes the carburetor throttle valve and allows the clutch to engage when the carburetor throttle valve is opened.

The joint 83 is provided in the hollow tip of the rod 10 to provide means of the rod 11 being assembled therewith.

The rod 10 also controls the bar 78—78 which closes the switches 13 and 14.

The cylinder 66 has a conduit 74 which leads to the same valve mechanism 63 and the conduit 36 as in Figure 1. This valve mechanism has been described in the first part of this description, and controls as seen in Figure 2 the inflow of the compressed air to the cylinder 66.

By forcing the rod 11 in the hollow tip of the rod 10 when no current is flowing through the solenoid 12, the spring 15 is allowed to act against the piston 5 and is of sufficient strength to act vigorously against the piston 5 forcing the rod 10 out of the cylinder 66 to open the carburetor throttle and to actuate the means for allowing the clutch to engage.

The spring 17 is of sufficient strength to overcome the spring 15, and when no force is acting on the accelerator pedal and the throttle rod 11, the spring 17 closes the carburetor throttle and provides a means for disengaging the clutch by acting on the rod 10 through the collar 16, moving the rod 10 into the cylinder 66. Figure 3 shows a spring and post construction 84 which is used to normally hold the valve 80 in closed position. The force applied by the spring 17 against the collar 18 moves the rod 11 from the cylinder 66. Moving of the rod 11 from the cylinder 66 allows the collar 16 to act on the piston 5 to move the rod 10 into the cylinder 66 and to close the switches 13 and 14 by means of the bar 78—78.

The principle objects of designing this automatic throttle shutoff are to provide means for closing the carburetor throttle automatically, and by the same means to close the throttle to operate an automatic mechanism for controlling the clutch.

The various parts having been described briefly, the working of the mechanism is as follows: The pressure applied to the accelerator pedal and the rod 11 moves the rod 11 into the cylinder 66, and the end of the rod 11 with the collar 16 into the hollow end of the rod 10. Moving of the rod 11 into the hollow end of the rod 10 allows the spring 15 to act against the piston 5 moving the rod 10 out of the cylinder 66 and opening the switches 13 and 14. Moving the rod 10 out of the cylinder 66 provides the necessary direction of motion in the rod 10 to open the carburetor throttle and to provide means of allowing the clutch to engage. An electrical current now being allowed to flow through the solenoid 12 the valve 63 is opened and the compressed air is allowed to enter the cylinder 66 which moves the piston 5 drawing the rod 10 into the cylinder 66 which direction of motion of the rod 10 closing the carburetor throttle, provides means for disengaging the clutch and closes the switches 13 and 14 when the carburetor throttle is closed and the clutch is disengaged. The electrical current through the solenoid 12 being broken, the valve 63 is closed by the spring 62, the compressed air in the cylinder 66 is allowed to escape through the opening 61 of the valve 63, and the spring 15 returns the piston 5 and the rod 10 to position against the collar 16 on the end of the rod 11.

As many changes could be made in the above construction, such as locating the cylinder 66 nearer the carburetor and not directly under the floor boards, and the use of either a diaphragm or a piston in the cylinder 66, and many other apparently widely different embodiments of my invention within the scope of the claim constructed without departing from the spirit or scope thereof: it is intended that all matter contained in the accompanying specifications and drawing shall be interpreted as illustrative of the possibilities of the combinations of different parts and not in a limiting sense as to the combinations illustrated.

Having thus described several of the embodiments of my invention, said invention being an improvement of a part of my invention, application for patent previously referred to, what I claim as new and desire to secure Letters Patent on is:

A control mechanism including a cylinder, a piston therein, a pedal extending from said cylinder, and means thereon normally raising said piston, a slip joint connection between said pedal and piston, and means to supply fluid pressure to operate said piston independently of said pedal.

ALLAN PENNY BLOXSOM.