United States Patent [19]

Stoltman

[11] **3,757,758**

[45] **Sept. 11, 1973**

[54] **THROTTLE PEDAL ACTUATED THROTTLE RETURN**

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[73] Assignee: **General Motors Corporation,** Detroit, Mich.

[22] Filed: **July 24, 1972**

[21] Appl. No.: **274,577**

[52] **U.S. Cl.** ..... **123/198 DB,** 123/98, 123/108, 180/82

[51] **Int. Cl.**.. **F02b 77/08,** F02d 11/04, B60k 27/08

[58] **Field of Search** ..... 123/198 D, 198 DB, 123/198 DC, 98, 108, 103 C, 103 D, 103 E, 142; 74/513; 180/82, 103, 105

[56] **References Cited**

UNITED STATES PATENTS

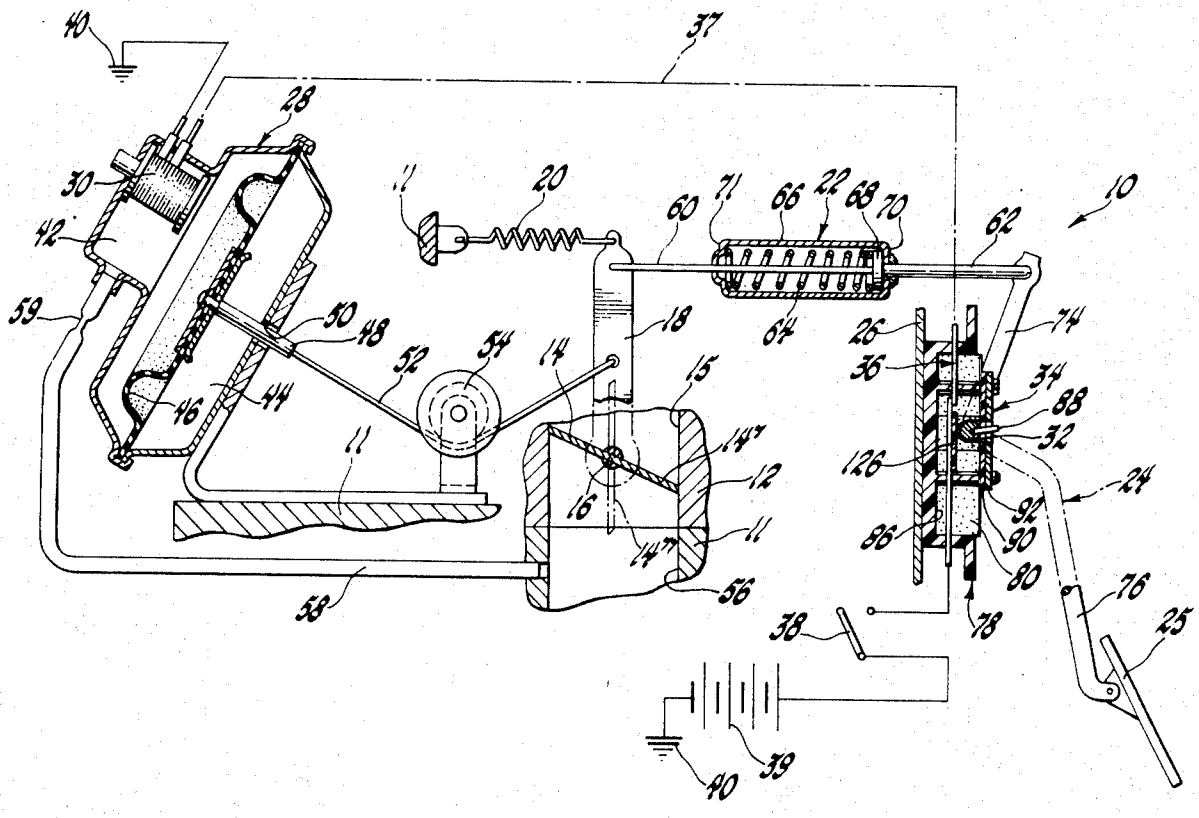
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Primary Examiner—Al Lawrence Smith
Attorney—E. W. Christen et al.

[57] **ABSTRACT**

A throttle lever for pivoting a carburetor throttle valve is coupled by a yieldable coupling device to normally follow the movement of a throttle linkage operable with an actuating force applied thereto to move the throttle valve towards a full open position. The throttle lever is also connected to a vacuum motor controlled by a solenoid valve to have a normal condition for permitting the throttle valve to be normally controlled through the throttle linkage and, alternatively, a throttle return condition for overcoming the bias of the coupling device and returning the throttle valve to an idle position when the throttle linkage is prevented from normally doing so. Electrically connected with the solenoid is a switch actuatable by a linkage lever comprising a portion of the throttle linkage and having a pivot section. The pivot section is supported by a pivot support so as to be pivotable about a pivot axis and movable laterally thereto to cause the switch to establish the vacuum motor in the normal and throttle return conditions on the respective application and removal of actuating force.

4 Claims, 5 Drawing Figures



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SHEET 1 OF 2

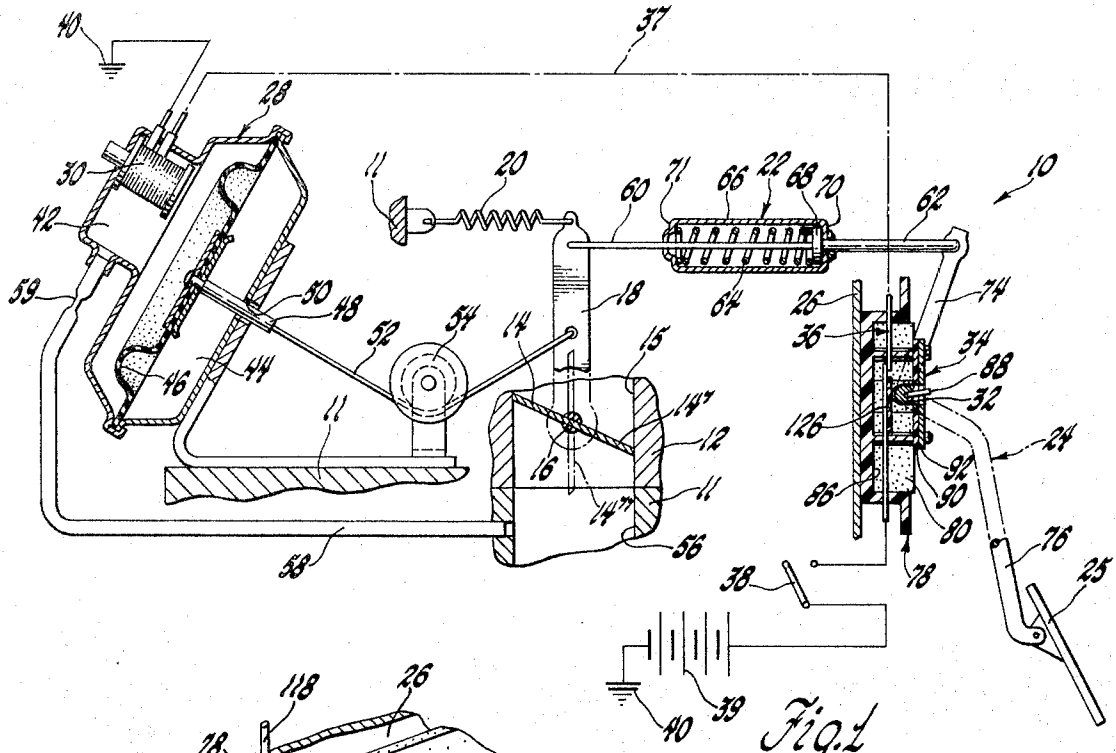


Fig. 1

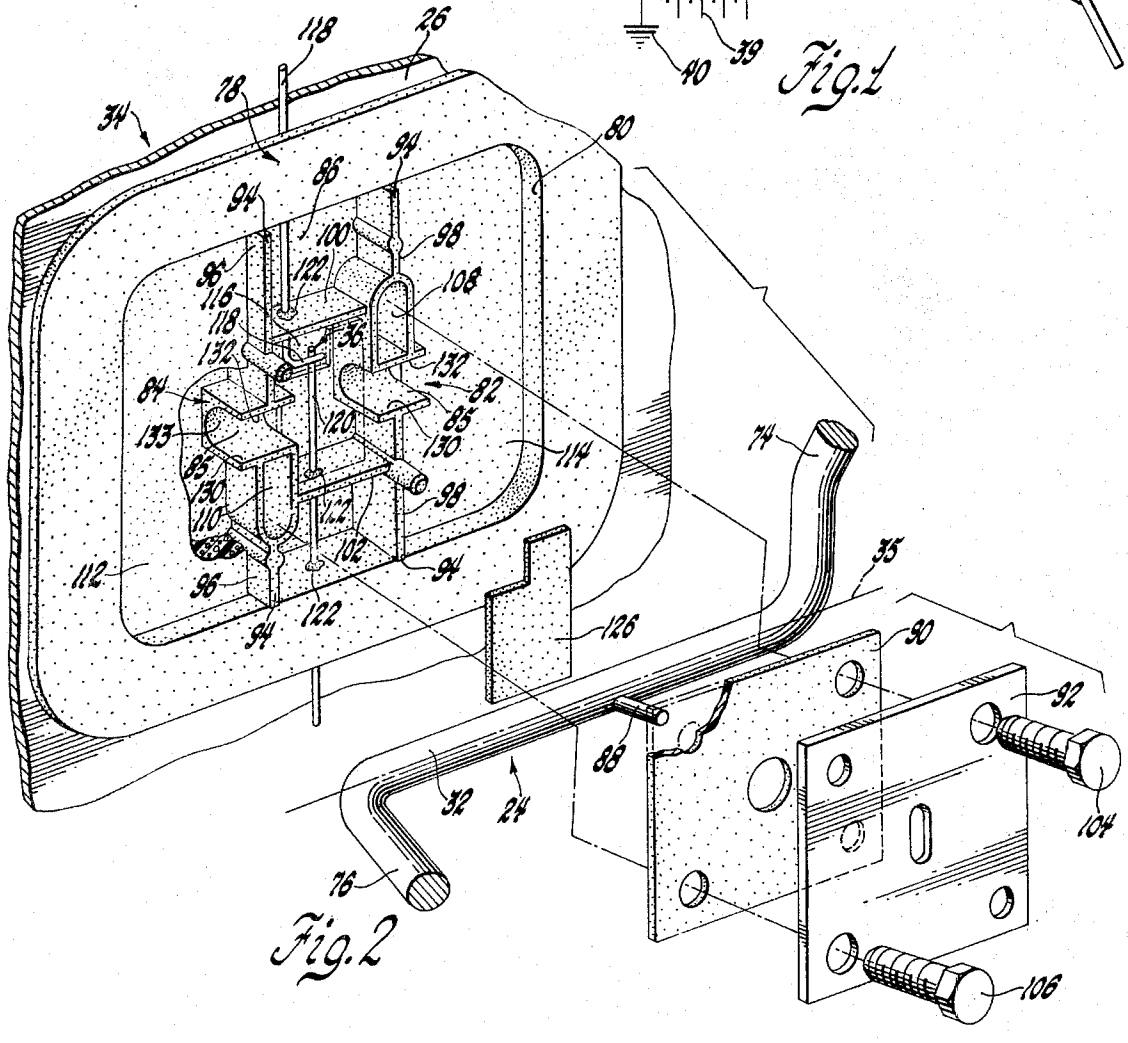


Fig. 2

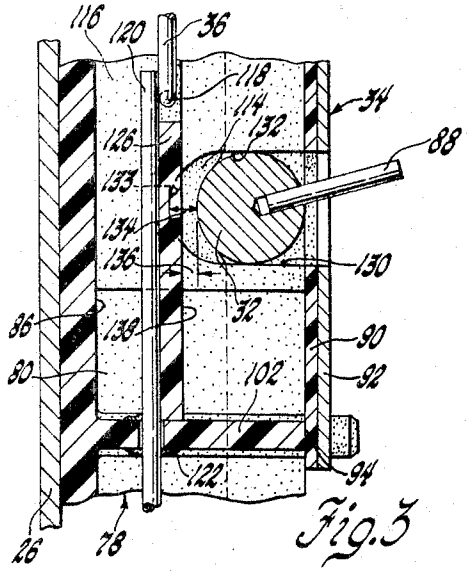


Fig. 3

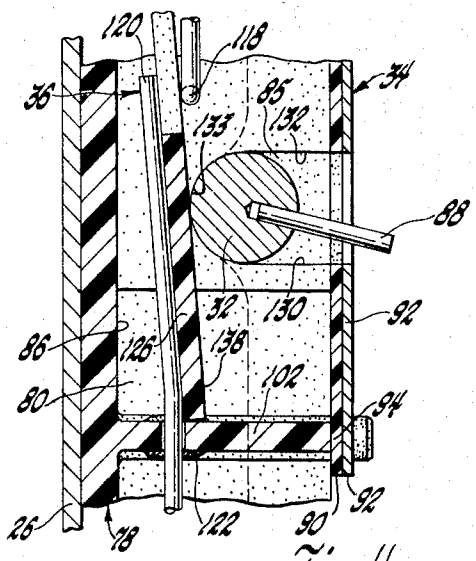


Fig. 4

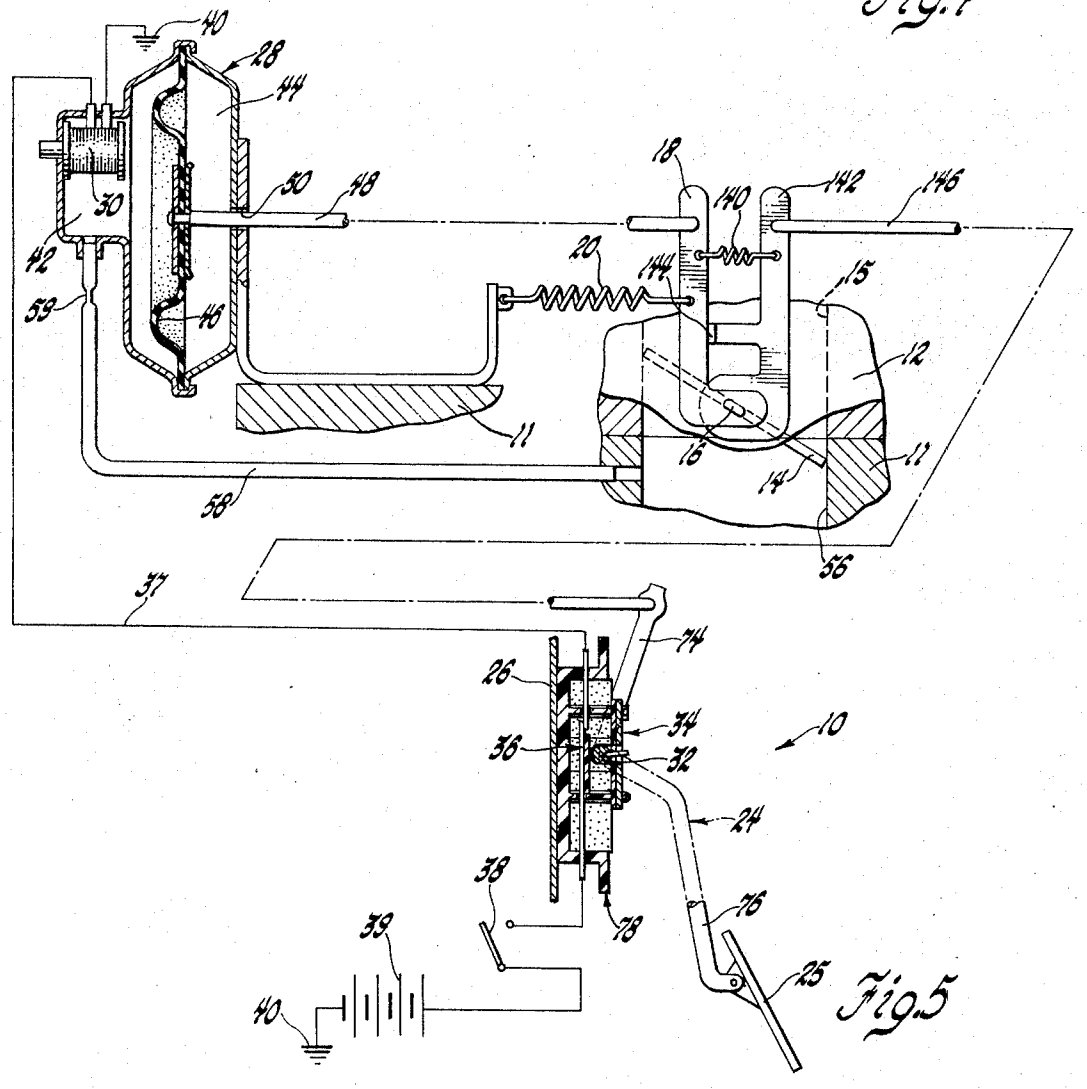


Fig. 5

THROTTLE PEDAL ACTUATED THROTTLE RETURN

This invention relates to throttle controls having a throttle pedal linkage for normally controlling the position of a throttle valve and more particularly to a throttle control for returning the throttle valve to its idle position when the throttle pedal linkage is prevented from normally doing so.

The present invention provides a throttle control wherein a throttle lever for pivoting a carburetor throttle valve is biased by a return spring to normally return the throttle valve in a throttle closing direction to an idle position and is coupled by a yieldable coupling device to normally follow the movement in a throttle opening direction of a throttle linkage including a pedal lever pivotably mounted to suspend a vehicle throttle pedal from a vehicle firewall. The carburetor throttle lever is also connected to a vacuum motor controlled by a solenoid valve to have a normal condition for permitting the throttle valve to be normally controlled through the throttle linkage and alternatively a throttle return condition for overcoming the bias of the coupling device and returning the throttle valve to its idle position when the throttle linkage is prevented from normally doing so. The pedal lever has a pivot section supported by a pivot support to be pivotable about a pivot axis and movable laterally thereto to an actuated position on application of an actuating force to the throttle pedal. Removal of the actuating force permits foam pads to bias the pedal lever translated to a non-actuated position. Operatively connected with the pedal lever to be actuatable by the pivot section on the lateral movement thereof is a pedal lever switch for establishing the vacuum motor in the normal condition when the pivot section is in the actuated position and in the return condition when in the non-actuated position.

It is an object of the present invention to provide a throttle control including a throttle linkage for normally controlling a throttle valve of an internal combustion engine carburetor and a control device responsive to removal of actuating force from the throttle linkage to actuate a throttle return apparatus to return the throttle valve to an idle position when the throttle linkage is prevented from normally doing so.

It is another object of the present invention to provide a throttle control including a throttle valve return apparatus that is actuated to return a throttle valve of an internal combustion engine carburetor to an idle position in response to removal of throttle actuating force when a pivotable throttle linkage lever is moved laterally to a pivot axis to operate a switch.

It is another object of the present invention to provide a throttle control having a vacuum motor that is actuated through a control device to return a throttle valve of an internal combustion engine carburetor to its idle position, the control device including a switch actuatable by a throttle pedal lever having a pivot section that is pivotable about a pivot axis and movable laterally thereto in response to the application and removal of actuating force from the pedal lever.

It is another object of the present invention to provide in an internal combustion engine throttle control having a throttle lever for pivoting a carburetor throttle valve between open and closed positions, a coupling spring for coupling the throttle lever to normally follow the motions of a vehicle throttle linkage when an actuating force is applied thereto, and a vacuum motor for overcoming the bias of the coupling spring and returning the throttle valve to its idle position should the throttle linkage be prevented from normally doing so when the actuating force is removed therefrom.

These and other objects and advantages of the present invention may be better understood with reference to the following description taken in conjunction with the attached drawings, wherein:

FIG. 1 is a view of one vehicle throttle control provided in accordance with the present invention;

FIG. 2 is an enlarged perspective view of an exploded throttle pedal support for supporting a vehicle throttle pedal and comprising a portion of the throttle control of FIG. 1;

FIG. 3 is an enlarged view through a cross-section of the throttle pedal support assembly of FIG. 2 when no actuating force is applied to the vehicle throttle pedal thereof;

FIG. 4 is an enlarged view through a cross-section of the throttle pedal support assembly of FIG. 2 when actuating force is applied to the vehicle throttle pedal thereof;

FIG. 5 is a view partially in schematic and partially in cross-section of another embodiment of another throttle control provided in accordance with the present invention.

With reference now to FIG. 1, there is shown a throttle control **10** for permitting a vehicle operator to control an internal combustion engine **11** from a remote location. Throttle control **10** includes a carburetor **12** having a throttle valve **14** pivotable in a throttle bore **15** on a throttle shaft **16** to control the flow of fuel to engine **11**. Throttle valve **14** is pivoted between an idle position **14'** and a full open position **14''** by a throttle lever **18** fixed to throttle shaft **16** and biased in a throttle closing direction by a throttle return spring **20**.

Throttle lever **18**, as described in greater detail below, is yieldably connected through a spring loaded coupling device **22** to a pedal lever **24** that suspends a vehicle throttle pedal **25** from a vehicle firewall **26** and pivots throttle lever **18** in a throttle opening direction when an actuating force is applied to pedal **25**. Also connected to throttle lever **18** is a pressure-differential-operated vacuum motor **28** controlled by a solenoid valve **30** to have a normal condition for allowing throttle lever **18** to be normally controlled by return spring **20** and throttle pedal **25** and alternatively a throttle return condition for returning throttle lever **18** to its idle position. As also described in further detail below, pedal lever **24** includes a pivot section **32** supported by a support and switch assembly **34** to be pivotable about a pivot axis **35** and movable laterally to pivot axis **35** between an actuated position and a non-actuated position in response to the application and removal of an actuating force to throttle pedal **25**.

Support and switch assembly **34** contains a pedal switch **36** electrically connected by a conductor **37** to solenoid valve **30** and actuatable by pedal lever **24** with lateral movement thereof to establish the vacuum motor **28** in the normal and return conditions in response to the application and removal of actuating force to throttle pedal **25**. The circuit for energizing solenoid valve **30** includes an ignition switch **38** and pedal switch **36** connected in series between a source of electrical power **39** and one terminal of solenoid valve **30**,

the other terminal of which is grounded at a suitable ground 40. With ignition switch 38 closed, solenoid valve 30 is energized whenever pedal switch 36 is biased closed upon the removal of actuating force from throttle pedal 25, such cooperation between switch 36 and pedal 25 also being hereinafter described in greater detail.

Vacuum motor 28 has a vacuum chamber 42 separated from an atmospheric chamber 44 by a flexible diaphragm 46 having an actuator rod 48 extending loosely through an atmospheric port 50 and connected to throttle lever 18 by a flexible chain 52 passing under a pulley 54. Vacuum chamber 42 communicates with an engine vacuum provided in an induction passage 56 of engine 11 through a conduit 58 having a flow restriction 59 to limit vacuum loss while solenoid valve 30 vents vacuum chamber 42 to atmosphere. With vacuum chamber 42 vented when solenoid valve 30 is deenergized, diaphragm 46 and actuator rod 48 are free to follow the motion imparted to throttle lever 18 from throttle pedal 25 through coupling device 22. When throttle lever 18 is not biased in a throttle opening direction by pedal lever 24, diaphragm 46 is biased by its natural resiliency to spring back to a central position in vacuum motor 28 thereby keeping chain 52 taut on pulley 54. When energized, solenoid valve 30 is closed to actuate vacuum motor 28 with engine vacuum so that throttle lever 18 is pulled by chain 52 to pivot throttle valve 14 in the closing direction to its idle position, such position being effected when a slow idle adjustment lever (not shown) affixed to throttle shaft 16 abuts against a stop (also not shown) jutting from the exterior of carburetor 12.

To permit vacuum motor 28 when actuated to return throttle valve 14 to its idle position regardless of the position of pedal lever 24, should lever 24 be prevented from moving normally in the counterclockwise throttle closing direction, spring loaded coupling device 22 includes a pair of throttle rods 60 and 62, one end of each being connected respectively to throttle lever 18 and pedal lever 24 and the other ends of which are biased in opposite directions by a throttle rod coupling spring 64 contained in a cylinder 66. Coupling spring 64 urges a spring stop 68 on the right end as viewed in FIG. 1 of throttle rod 60 to normally abut against a stop wall 70 at one end of cylinder 66 and away from another wall 71 at the other end.

The torque applied by vacuum motor 28 when actuated to throttle lever 18 is sufficient when pedal lever 24 is prevented from moving normally in a throttle closing direction to overcome the bias of throttle rod coupling spring 64 so that spring stop 68 compresses spring 64 against cylinder end wall 71 as throttle rod arm 60 is retracted in a leftward throttle closing direction. Moreover, the effective length of travel of spring stop 68 when compressing spring 64 in cylinder 66 is sufficient to permit throttle lever 18 to return throttle valve 14 to its idle position 14' from any position including its full open position 14''. However, to normally permit throttle lever 18 to be accurately positioned by the actuation of throttle pedal 25, the bias of throttle rod coupling spring 64 is made greater than the return bias of return spring 20 so that when throttle pedal 25 is actuated in a throttle opening direction against the bias of return spring 20, return spring 20 yields and coupling spring 64 normally does not.

As may be better understood in conjunction with FIGS. 2, 3, and 4, pivot section 32 of pedal lever 24 is of a generally circular cross-section extending along pivot axis 35 therethrough and is integral with an extends horizontally between a pair of generally vertical upper and lower lever arms 74 and 76 that are operatively connected with throttle rod arm 62 and throttle pedal 25, respectively. Pivot section 32 fits into the horizontal width of a cavity 80 in a molded plastic support bracket 78 comprising a portion of support and switch assembly 34. Bracket 78 has a pair of horizontally spaced bearing members 82 and 84 upstanding from a floor 86 of cavity 80 to support pivot section 32 and providing bearing channels 85 to allow slight translation of pivot section 32 in a direction transverse to pivot axis 35 while allowing pedal lever 24 to be pivoted thereabout.

To prevent binding thereof against the sides of cavity 80, pivot section 32 is centrally located therein by a positioning pin 88 extending through suitable guide apertures in a smooth plastic sheet 90 and a mounting plate 92. Sheet 90 and mounting plate 92 are guided onto a flat clamping surface 94 provided by the top surfaces of bearing members 82 and 84, by the top surfaces of a pair of vertical support walls 96 and 98 connecting bearing members 82 and 84 with the top and bottom sides of cavity 80, and also by the top surfaces of a pair of support walls 100 and 102 extending generally horizontally between vertical support walls 96 and 98. Support bracket 78 with pivot section 32 supported and retained therein is affixed to firewall 26 by a pair of screws 104 and 106 passing through clamping plate 92, sheet 90, and suitable apertures 108 and 110.

Throttle pedal 24 and support bracket 78 hereinabove described may be of the types provided in certain commercial vehicles produced by the General Motors Corporation and may correspond for example with those on page 6M–28 of the "1970 Oldsmobile Chassis Service Manual." However, to provide support and switch assembly 34 for use with the present invention, support bracket 78 is then augmented by a pair of foam pads 112 and 114 located in cavity 80 on floor 86 thereof so as to bound a generally rectangular centrally located pocket 116 defined in cavity 80 between support walls 96, 98, 100 and 102. Also added is a fixed switch arm 118 and a movable switch arm 120, the free ends of which normally contact each other in pocket 116 to provide switch 36 and the fixed ends of which are cemented by cement 122 in holes through upper and lower support walls 100 and 102 and also in the upper and lower sides of cavity 80. Lastly, another smooth plastic sheet 126 is fitted between pivot section 32 and movable switch arm 120 to electrically isolate pedal lever 24 from switch 36 and to provide a smooth surface on which pivot section 32 may be provided. Plastic sheet 126 has a horizontal width slightly less than the space between bearing members 82 and 84 and has a length slightly less than the space between upper and lower walls 100 and 102, the upper left-hand corner of sheet 126 being cut out so as to not bear on fixed switch arm 118 when actuated by pivot section 32 when moved laterally.

As may be better understood with reference to FIG. 2, in conjunction with FIGS. 3 and 4, bearing members 82 and 84 each comprise a pair of channel surfaces 130 and 132 that are separated by a slot channel 85, the length of which provides a clearance 134 to a bottom

133 of channel 85 when pivot section 32 is biased by foam pads 112 and 114 to a non-actuated position against sheet 90 with no actuating force on pedal 25. A clearance 136, smaller than clearance 134 by the thickness of sheet 126, is provided between a top surface 138 of sheet 126 and the outer diameter of pivot section 32 when in the non-actuated position with no actuating forces on pedal 25. In such position, movable switch arm 120 is in a resilient contact with fixed contact arm 118 as best seen in FIG. 2. When actuating force is applied to the throttle pedal 25, pedal lever 24 in addition to normally opening throttle valve 14 actuates pedal switch 36 through an actuator such as provided by pivot section 32 of the present embodiment. Pedal lever 24 is moved laterally to the left as viewed in the figures in a direction transverse to the direction of pivot axis 35 against the bias of the foam pads 112 and 114 to cause pivot section 32 to first take up that portion of clearance 134 comprised by clearance 136 until contact is made with top surface 138 of sheet 126 and to then take up the remaining portion of clearance 134 until contacting the bottoms 133 of channels 85. In taking In taking up this remaining portion of clearance 134, pivot section 32 urges sheet 126 against movable contact arm 120 to break the electrical contact with fixed contact arm 118. With pivot section 32 held in contact with the bottoms 133 of bearing member channels 85 by actuating force applied to throttle pedal 25, bearing bottoms 133 provide a fulcrum on which pedal lever 24 is pivoted about pivot axis 35 to open the throttle valve 14 towards its full opening position 14'' while the periphery of pivot section 32 sliding on sheet 126 holds switch 36 open as lever 24 pivots.

Thus, with no actuating force on pedal 25, foam pads 112 and 114 apply a return bias urging pivot section 32 to the non-actuated position against sheet 90 allowing switch 36 to be in a normally closed or non-actuated condition. When an actuating force is applied to throttle pedal 25, pivot section 32 is forced in a direction to overcome the return bias of pads 112 and 114 and the resiliency of movable switch arm 120. Pivot section 32 as it is moved laterally towards the actuated position determined by abutment with bearing bottoms 133 actuates switch 36 to its open or actuated condition wherein contact arms 118 and 120 are held open by pivot section 32. Upon release of actuating force from throttle pedal 25, foam pads 112 and 114 cooperate with the resiliency of movable arm 120 to move pivot section 32 rightwardly to its non-actuated position wherein switch 36 is again returned to its normally closed or non-actuated condition.

Another embodiment of the invention may be better understood with reference to FIG. 5 wherein components having a structure and operation like those of FIG. 1 are denoted by like designators. The primary difference between the FIG. 1 and FIG. 5 embodiments is that the yieldable coupling device 22 of the FIG. 1 embodiment is replaced by a lever coupling spring 140 that yieldably biases throttle lever 18 and to normally follow a second throttle lever 142 loose on throttle shaft 16 and pivotable in the throttle opening direction by a throttle rod 146 connected to upper pedal lever arm 74. Lever coupling spring 140 biases levers 18 and 142 in opposite directions on throttle shaft 16 until a stop 144 on throttle lever 142 normally engages throttle lever 18. The bias of lever coupling spring 140 is greater than return spring 20 so that return spring 20 yields and throttle levers 18 and 142 normally move conjointly when pedal lever 24 is pivoted on pivot axis 35. However, should pedal lever 24, throttle rod 146, or throttle lever 142 for some reason be prevented from moving in the throttle closing direction with throttle lever 18, vacuum motor 28 when actuated forces lever 18 with a force sufficient to overcome the bias of lever coupling spring 140 to pivot lever 18 in a counterclockwise closing direction relative to second throttle lever 142 so that lever 18 returns throttle valve 14 to its idle position.

OPERATION

In normal operation of the FIG. 1 and 5 embodiments, with no actuating force on throttle pedal 25, throttle valve 14 is normally returned to idle position 14' by return spring 20 and pivot section 32 is held in its rightward non-actuated position by the bias applied by foam pads 112 and 114. Pedal lever switch 36 is in its normally closed condition wherein it completes the circuit for energizing solenoid valve 30 with power from vehicle battery 39 through ignition switch 38. Thus energized, solenoid valve 30 closes the vent from vacuum chamber 42 so that vacuum communicated thereto from induction passage 56 through conduit 58 provides a pressure differential across vacuum motor diaphragm 46 forcing throttle lever 18 in a counterclockwise direction. However, with throttle valve 14 stopped from turning further in a throttle closing direction by abutment between the carburetor idle stop and the slow idle lever affixed to throttle shaft 16, actuation of vacuum motor 28 under these circumstances merely holds throttle lever 18 in its idle position.

Application of actuating force to throttle pedal 25 moves pivot section 32 laterally to pivot axis 35 in bearing channel 85 of lever bearing members 82 and 84 against the bias of foam pads 112 and 114 as the pedal lever 24 pivots slightly in a counterclockwise direction against resistance provided at upper lever arm 74 by throttle rod 62 in the case of the FIG. 1 embodiment or throttle rod 146 in the case of the FIG. 5 embodiment. Pivot section 32 as it is moved leftwardly in bearing channel 85 contacts sheet 126 and therethrough actuates switch 36 by forcing movable switch arm 120 thereof out of contact with fixed switch arm 118, thereby interrupting the energization circuit for solenoid valve 30. Leftward lateral movement of pivot section 32 continues until contact is made with the bottom surfaces 133 of lever bearings 82 and 84 to determine the actuated position of pedal lever 24. Pivot section 32 is then pivoted in a clockwise direction about pivot axis 35 therethrough while held in a sliding contact between sheet 126 and bottoms 133 of bearings 82 and 84. Pedal lever 24 when so pivoted pivots throttle lever 18 in the clockwise throttle opening direction to position throttle valve 14 in a position intermediate its idle position 14' and its full open position 14''.

Normally, subsequent removal of actuating force from throttle pedal 25 results in throttle valve 14 being returned to its idle position by the bias of return spring 20, pedal lever 24 following such closing movement by being pivoted in the counterclockwise direction about pivot axis 35. However, should pedal lever 24 for some reason be prevented from pivoting normally in the counterclockwise direction to follow motion of throttle lever 18, the closure of pedal switch 36 associated with the return translation of pivot section 32 to its non-

actuated position by foam pads **112** and **114** actuates vacuum motor **28** to force throttle lever **18** in the throttle closing direction. With pedal lever **24** affixed to coupling cylinder **22** in the case of the FIG. **1** embodiment or to second throttle lever **142** in the case of the FIG. **5** embodiment, actuation of vacuum motor **28** when pedal lever **24** does not follow throttle lever **18** causes coupling spring **64** in the case of the FIG. **1** embodiment, or spring **140** in the case of the FIG. **5** embodiment, to yield as throttle lever **18** is pivoted in the counterclockwise throttle closing direction relative to throttle rod **62** or **146.** Such yielding permits vacuum motor **28** to pivot throttle lever **18** until throttle valve **14** is returned to its idle position regardless of the position of pedal lever **24** or throttle rods **62** or **146.**

Having described two embodiments of the present invention, it is understood that the specific terms and examples are employed in the descriptive sense only and not for the purpose of limitation. Other embodiments of the invention, modifications thereof, and alternatives thereto may be used. I therefore aim in the appended claims to cover such modifications and changes as are within the true scope and spirit of my invention.

What I claim as new and desire to secure by letters patent of the United States is:

1. In a vehicle:

a. an internal combustion engine;

b. a carburetor having a throttle valve for controlling said engine and a throttle lever for pivoting said throttle valve between an idle position and a full open position;

c. throttle linkage means connected with said throttle lever for permitting a vehicle operator to control said engine by moving said throttle valve in a throttle opening direction towards said full open position, said linkage means including a return spring for biasing said throttle lever in a throttle closing direction towards said idle position, a linkage lever having a pivot section, pivot support means for supporting said pivot section in one limiting position to pivot about an axis and permitting lateral movement of said pivot section relative to said axis to another limiting position, biasing means for normally yieldingly holding said pivot section in said other limiting position and yielding to movement of said pivot section to said one limiting position by a throttle actuating force applied to said linkage lever, and yieldable coupling means connected between said throttle lever and said linkage lever and including spring means for normally coupling one of said levers to move with the other and alternatively yielding to permit said throttle lever to be moved in said closing direction relative to said linkage lever when said throttle lever is forced with a bias greater than the bias of said return spring;

d. throttle return means connected to said throttle lever operable in a normal condition to permit said throttle lever to be normally controlled by said linkage lever and said return spring and alternatively in a throttle return condition to overcome the bias of said coupling means and return said throttle lever to said idle position when said throttle linkage means is prevented from normally doing so; and

e. throttle return control means for controlling said throttle return means and including switch means operatively connected with said linkage lever to be actuated thereby on lateral movement of said pivot section to said one limiting position to establish said throttle return means in said normal condition on application of said actuating force and alternatively to be actuated thereby on lateral movement of said pivot section to said other limiting position to establish said throttle return means in said throttle return condition upon removal of said actuating force.

2. In a vehicle:

a. an internal combustion engine;

b. a carburetor having a throttle valve for controlling said engine and a throttle lever for pivoting said throttle valve between an idle position and a full open position;

c. throttle linkage means connected with said throttle lever for permitting a vehicle operator to control said engine from a remote location by moving said throttle valve in a throttle opening direction towards said full open position, said linkage means including a return spring for biasing said throttle lever in a throttle closing direction towards said idle position, a linkage lever having a pivot section, pivot support means for supporting said pivot section in one limiting position to pivot about an axis and permitting lateral movement of said pivot section relative to said axis to another limiting position, a throttle pedal for pivoting and laterally moving said linkage lever, biasing means for normally yieldingly holding said pivot section in said other limiting position and yielding to movement of said pivot section to said one limiting position by a throttle actuating force applied to said linkage lever, and yieldable coupling means connected between said throttle lever and said linkage lever and including spring means for normally coupling one of said levers to move with the other and alternatively yielding to permit said throttle lever to be moved in said closing direction relative to said linkage lever;

d. throttle return means connected to said throttle lever operable in a normal condition to permit said throttle lever to be normally controlled by said linkage lever and said return spring and alternatively in a throttle return condition to overcome the bias of said coupling means and return said throttle lever to said idle position when said throttle linkage means between said yieldable coupling means and said throttle pedal is prevented from normally doing so; and

e. throttle return control means for controlling said throttle return means and including switch means operatively connected with said linkage lever to be actuated thereby on lateral movement of said pivot section to said one limiting position to establish said throttle return means in said normal condition on application of said actuating force and alternatively to be actuated thereby on lateral movement of said pivot section to said other limiting position to establish said throttle return means in said throttle return condition upon removal of said

3. In a vehicle:

a. an internal combustion engine;

b. a carburetor having a throttle valve for controlling said engine and a throttle lever for pivoting said

throttle valve between an idle position and a full open position;

c. throttle linkage means connected with said throttle lever for permitting a vehicle operator to control said engine by moving said throttle valve in a throttle opening direction towards said full open position, said linkage means including a return spring for biasing said throttle lever in a throttle closing direction towards said idle position, a linkage lever having a pivot section, pivot support means for supporting said pivot section in one limiting position to pivot about an axis and permitting lateral movement of said pivot section relative to said axis to another limiting position, biasing means for normally yieldingly holding said pivot section in said other limiting position and yielding to movement of said pivot section to said one limiting position by a throttle actuating force applied to said linkage lever, and yieldable coupling means including a first and second throttle rod, stop means provided by said throttle rods, and a coupling spring for yieldingly engaging said stop means, said throttle rods connected respectively to said throttle lever and said linkage lever and coupling spring normally engaging said stop means so that one of said levers may be moved with the other and alternatively yielding to allow said stop means to disengage so that said throttle lever may be moved in said closing direction relative to said linkage lever;

d. throttle return means connected to said throttle lever operable in a normal condition to permit said throttle lever to be normally controlled by said linkage lever and said return spring and alternatively in a throttle return condition to overcome the bias of said coupling spring and return said throttle lever to said idle position when said throttle linkage means is prevented from normally doing so; and

e. throttle return control means for controlling said throttle return means and including switch means operatively connected with said linkage lever to be actuated thereby on lateral movement of said pivot section to said one limiting position to establish said throttle return means in said normal condition on application of said actuating force and alternatively to be actuated thereby on lateral movement of said pivot section to said other limiting position to establish said throttle return means in said throttle return condition upon removal of said actuating force.

4. In a vehicle:

a. an internal combustion engine;

b. a carburetor having a throttle valve for controlling said engine and a first throttle lever for pivoting said throttle valve between an idle position an a full open position;

c. throttle linkage means connected with said throttle lever for permitting a vehicle operator to control said engine by moving said throttle valve in a throttle opening direction towards said full open position, said linkage means including a return spring for biasing said first throttle lever in a throttle closing direction towards said idle position, a linkage lever having a pivot section, pivot support means for supporting said pivot section in one limiting position to pivot about an axis and permitting lateral movement of said pivot section relative to said axis to another limiting position, biasing means for normally yieldingly holding said pivot section in said other limiting position and yielding to movement of said pivot section to said one limiting position by a throttle actuating force applied to said linkage lever, a second throttle lever pivotable in a throttle opening direction relative to said first throttle lever, and yieldable coupling means for normally coupling said second throttle lever into engagement with said first throttle lever so that said throttle levers normally move conjointly and alternatively yielding to permit said first throttle lever to be moved in said closing direction relative to said second throttle lever;

d. throttle return means connected to said throttle lever operable in a normal condition to permit said throttle lever to be normally controlled by said linkage lever and said return spring and alternatively in a throttle return condition to overcome the bias of said coupling means and return said throttle lever to said idle position when said throttle linkage means is prevented from normally doing so; and

e. throttle return control means for controlling said throttle return means and including switch means operatively connected with said linkage lever to be actuated thereby on lateral movement of said pivot section to said one limiting position to establish said throttle return means in said normal condition on application of said actuating force and alternatively to be actuated thereby on lateral movement of said pivot section to said other limiting position to establish said throttle return means in said throttle return condition upon removal of said actuating force.

* * * * *

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,757,758 Dated September 11, 1973

Inventor(s) Donald D. Stoltman

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 55, "provided" should be --pivoted--,

Column 5, line 23, delete "In taking" first instance,

Column 8, line 63, after "said" insert --actuating force.--.

Signed and sealed this 18th day of June 1974.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents