

Oct. 5, 1965

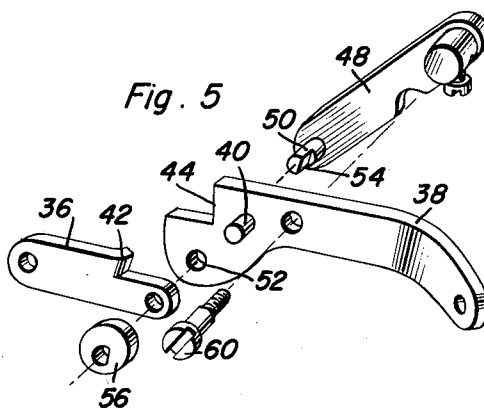
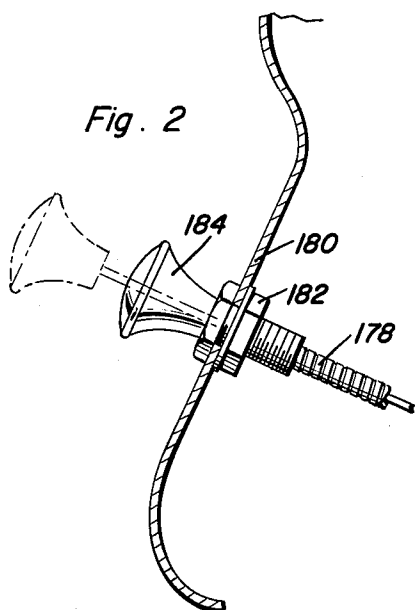
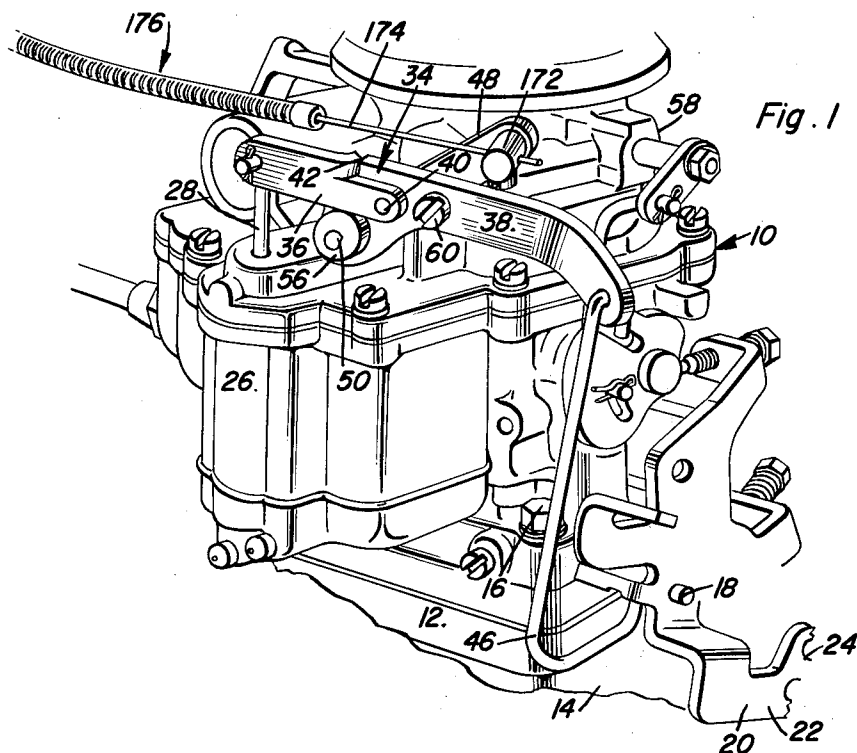
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3,210,054

CARBURETOR ACCELERATOR PUMP LOCKOUT

Filed April 9, 1962

4 Sheets-Sheet 1



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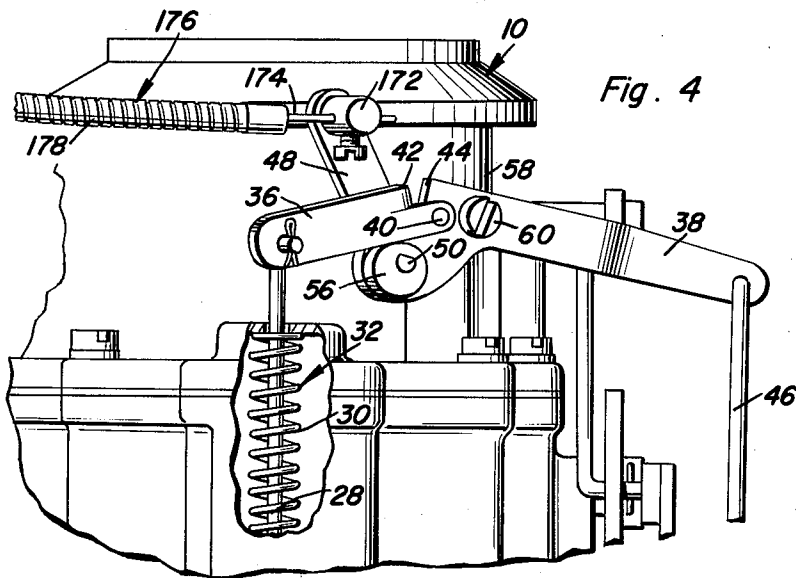
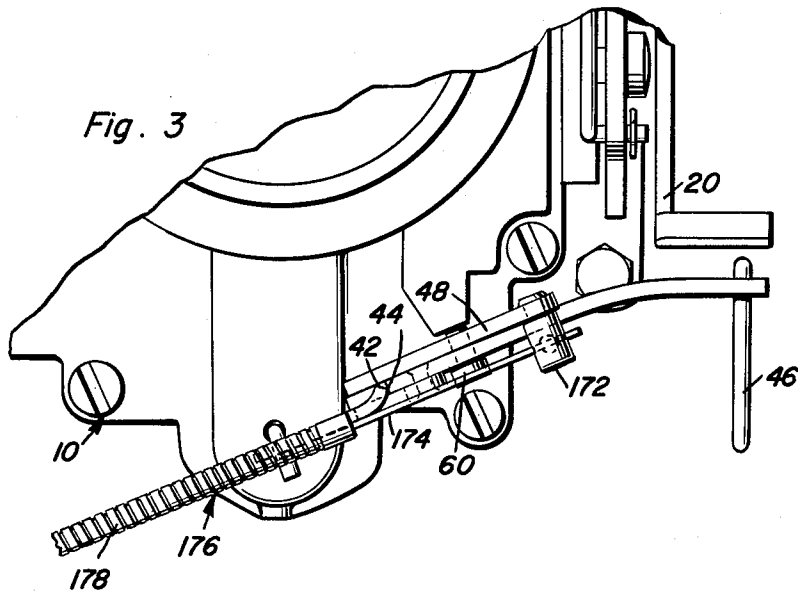
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CARBURETOR ACCELERATOR PUMP LOCKOUT

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4 Sheets-Sheet 2



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CARBURETOR ACCELERATOR PUMP LOCKOUT

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4 Sheets-Sheet 3

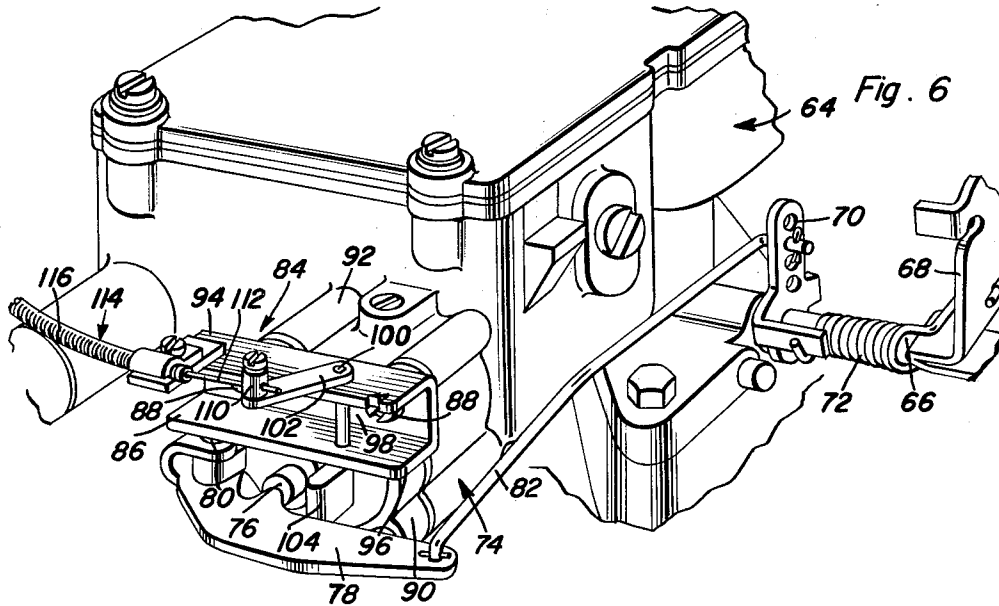


Fig. 7

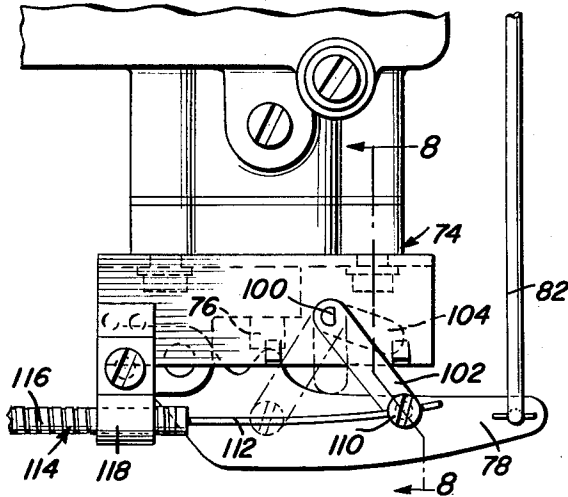


Fig. 8

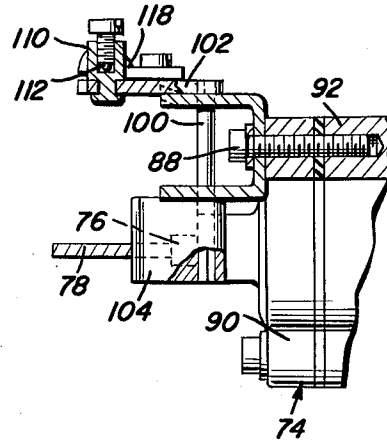
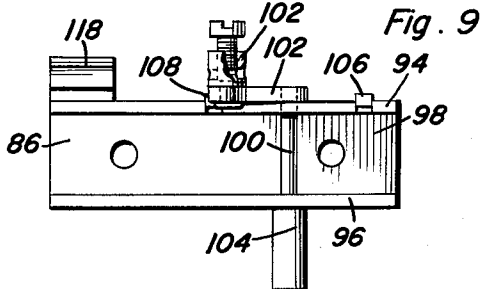


Fig. 9



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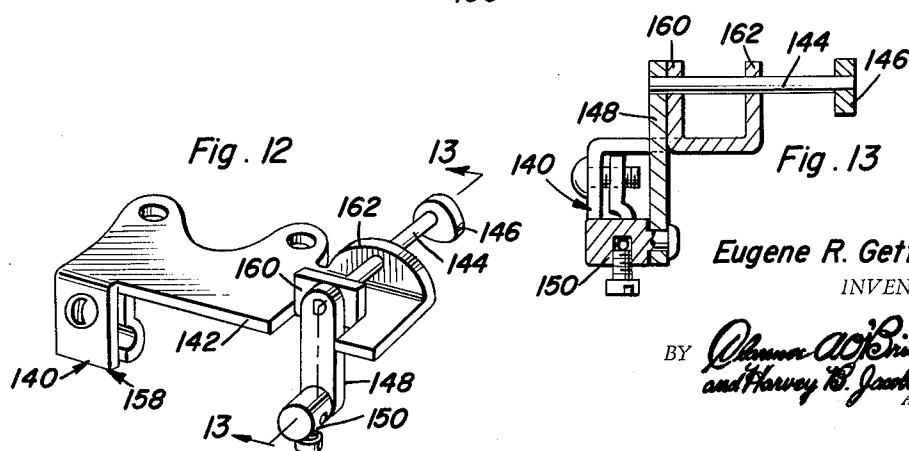
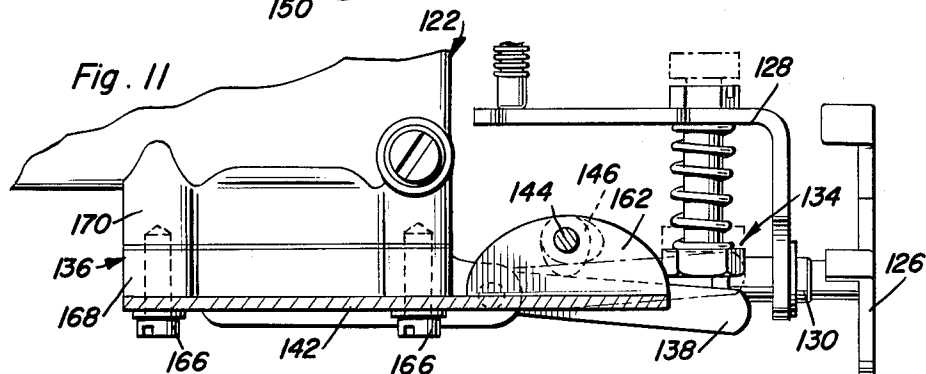
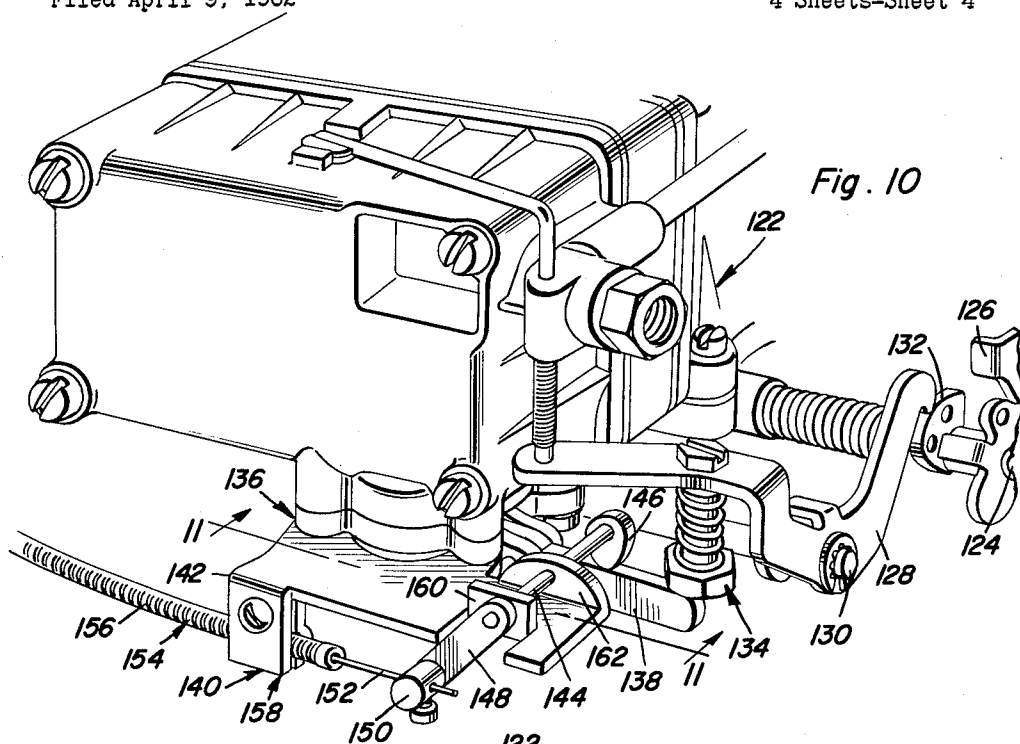
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CARBURETOR ACCELERATOR PUMP LOCKOUT

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4 Sheets-Sheet 4



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3,210,054
CARBURETOR ACCELERATOR PUMP LOCKOUT
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 Filed Apr. 9, 1962, Ser. No. 186,037
 2 Claims. (Cl. 261—34)

This invention relates to a novel and useful accelerator pump lockout for carburetors of the type provided with accelerator pumps for injecting supplemental amounts of fuel into the airstream passing through a carburetor during the period the throttle mechanism of the carburetor is being opened.

Most carburetors are provided with throttle means movable between open and closed positions and an accelerator pump having an actuator movable between a first normally at rest position and a second position toward which the actuator is moved to effect operation of the accelerator pump in order to inject a supplemental amount of fuel into the stream of air passing through the carburetor. Linkage means is provided and is operatively connected between the throttle means and the actuator for the accelerator pump for movement of the actuator toward the second position in response to movement of the throttle means toward the open position. In this manner, if a combustion engine to which a carburetor is secured is operating at low speeds and under a load and the throttle means is suddenly moved from a partially closed position to the full open position, a supplemental amount of fuel will be injected into the airstream passing through the carburetor thereby preventing the initial increase of air and fuel mixture passing through the carburetor from being lean. Carburetors not provided with operable accelerator pumps will cause the combustion engine to which they are secured to starve for fuel and thus hesitate if the throttle means is suddenly moved from a partially closed position toward a fully opened position. Accordingly, accelerator pumps are provided in order to eliminate the hesitation or momentary starving of an internal combustion engine during the period the carburetor throttle means is moved suddenly toward the full open position. However, if a combustion engine is operating at normal operating speeds there is a sufficient flow of air and fuel mixture through the carburetor of that combustion engine to substantially entirely eliminate any hesitation of the operation of the internal combustion engine should the throttle means of the carburetor be suddenly moved toward an open position. It is usually only when a combustion engine is operating at slow speeds and under a load that it will hesitate momentarily if the throttle means is suddenly moved toward the full open position without supplemental fuel being injected into the airstream passing through the carburetor of the combustion engine. Further, the conventional accelerator pump is also of assistance during the starting of a cold combustion engine in that the throttle means of the carburetor of the combustion engine may be continuously actuated if desired in order to inject supplemental quantities of fuel into the flow of air and fuel passing through the carburetor in order that an over-rich air and fuel mixture may be provided. However, should the carburetor of a combustion engine become flooded or the intake passages of the combustion engine become flooded with an excess of fuel, it would be desirable to be able to prevent the accelerator

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pump from injecting a supplemental amount of fuel into the fuel-air passages of the carburetor in order that the intake passages of the combustion engine and the carburetor flooded condition may be more readily overcome.

Accordingly, it may be seen that there are many instances when the normal operation of a carburetor accelerator pump is desirable and also that there are instances when operation of such an accelerator pump would be undesirable.

When an internal combustion engine of a vehicle is operating at cruising speed, there is no need for supplemental amounts of fuel to be injected into the fuel and air passages of the carburetor and internal combustion engine each time the throttle means of the carburetor is moved toward an open position and accordingly, if the normal operation of an accelerator pump could be terminated at will, a person driving a conventional motor vehicle at cruising speeds could render the accelerator pump inoperative and thereby save appreciable amounts of fuel. Should the driver of a motor vehicle by proceeding at normal highway speeds and yet in moderate traffic traveling somewhat slower than the speed at which the driver wishes to proceed, each time the driver wishes to pass another motor vehicle he must actuate his throttle controls in order to open the throttle means of the carburetor. If the accelerator pump of the carburetor were rendered inoperative, the operation of the internal combustion engine of the motor vehicle would be substantially the same although considerable quantities of fuel would be saved by the inoperativeness of the accelerator pump.

Accordingly, it is the main object of this invention to provide a carburetor accelerator pump lockout having control means therefor which may be readily operated from a remote position and utilized to render the accelerator pump of a conventional motor vehicle carburetor inoperative for the purpose of injecting supplemental quantities of fuel into the fuel and airstream passing through the carburetor each time the accelerator controls are moved toward the fully open position.

Another object of this invention, in accordance with the preceding object, is to provide a carburetor accelerator pump lockout embodying a method of operation which will lend itself readily to being incorporated into the manufacture of various types of motor vehicle carburetors.

Another object of this invention is to provide a carburetor or accelerator pump lockout in accordance with the preceding objects which may be readily added to existing carburetors as well as incorporated into the manufacture of new carburetors.

A final object to be specifically enumerated herein is to provide a carburetor accelerator pump lockout in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a fragmentary perspective view of one

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of the more conventional types of internal combustion engine carburetors shown with one form of the carburetor or accelerator pump lockout operatively associated therewith;

FIGURE 2 is a fragmentary vertical sectional view taken upon a plane passing through the control panel or dashboard of a motor vehicle showing the control assembly for the pump lockout illustrated in FIGURE 1;

FIGURE 3 is an enlarged fragmentary plan view of the embodiment illustrated in FIGURE 1;

FIGURE 4 is a fragmentary enlarged side elevational view of the embodiment illustrated in FIGURE 1 as seen from the left side of FIGURE 1 and showing the pump lockout in a different position, parts of the carburetor being broken away and shown in section;

FIGURE 5 is an exploded perspective view of the pump lockout illustrated in FIGURES 1, 3 and 4, the control means therefor being omitted;

FIGURE 6 is a fragmentary perspective view of another conventional type of internal combustion engine carburetor shown with a modified form of pump lockout operatively associated therewith;

FIGURE 7 is a fragmentary top plan view of the embodiment illustrated in FIGURE 6 and with an alternate position of the pump lockout shown in phantom lines;

FIGURE 8 is a fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 8—8 of FIGURE 7;

FIGURE 9 is a side elevational view of the pump lockout, portions thereof being broken away and shown in section;

FIGURE 10 is a fragmentary perspective view of a still further conventional type of carburetor and showing a further modified form of pump lockout operatively associated therewith;

FIGURE 11 is an enlarged vertical sectional view taken substantially upon the plane indicated by the section line 11—11 of FIGURE 10, portions of the pump lockout being shown in alternate positions by means of phantom lines;

FIGURE 12 is an assembled perspective view of the pump lockout illustrated in FIGURES 10 and 11 with the control means removed; and

FIGURE 13 is a vertical sectional view taken substantially upon the plane indicated by the section line 13—13 of FIGURE 12.

With attention now directed to FIGURES 1 through 5 of the drawings there will be seen a first conventional type of internal combustion engine carburetor generally referred to by the reference numeral 10 which is mounted upon a support flange 12 of an intake manifold 14 by means of fasteners 16 secured through the base of the carburetor 10. The carburetor 10 includes a throttle shaft 18 upon which a throttle lever 20 is mounted for rotation therewith. The throttle lever 20 is provided with an arm portion 22 having a plurality of apertures 24 formed therein for connection with a throttle rod such as that which is operatively connected to the foot control of conventional motor vehicles.

The carburetor 10 includes an accelerator pump housing portion 26 and the portion 26 has a piston (not shown) disposed therein to which the lower end of the piston rod 28 or actuator of the accelerator pump is secured. The portion of the actuator or piston rod 28 disposed within the portion 26 has a compression spring 30 disposed thereabout and it is to be understood that the compression spring 30 normally yieldably urges the piston rod 28 to a lowermost position.

The actuator or piston rod 28 is movable between an upper first position and a lower second position and the accelerator pump generally referred to by the reference numeral 32 is actuated to inject a supplemental amount of fuel into the air and fuel mixture passing through the carburetor 10 upon movement of the actuator 28 from an upper position toward a lower position.

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The upper end of the actuator 28 is pivotally secured to a walking beam generally referred to by the reference numeral 34 and on conventional carburetors the walking beam 34 is of one piece construction. However, it will be noted that the walking beam 34 is of two piece construction including a pair of opposite end sections 36 and 38. Adjacent ends of the end sections 36 and 38 are overlapped and pivotally secured together by means of a pivot pin 40 carried by the end section 38. The end section 36 is provided with a laterally directed abutment portion 42 which is disposed for abutting engagement with the surface 44 on the end section 38 and in this manner, the end sections are pivotally secured together at adjacent ends in a manner to prevent pivotal movement of the end section 36 relative to the end section 38 in one direction past a predetermined position defined by the engagement of the abutment 42 with the surface 44.

A connecting rod 46 has one end operatively connected to a throttle lever 20 and the other end is pivotally secured to the free end of the end section 38. A control lever 48 is provided and includes a stub axle portion on one end which is referred to by the reference numeral 50 and is rotatably received through an aperture 52 formed in the end section 38 adjacent the pivot pin 40. The stub axle 50 has a flat 54 formed thereon and a cam member 56 is secured to the end portion of the stub axle 50 which projects through the aperture 52. From a comparison of FIGURES 1 and 4 of the drawings it may be seen that the cam member 56 may be rotated from the lowered position illustrated in FIGURE 4 to the uppermost position illustrated in FIGURE 1 in order to cam the abutment 42 into engagement with the surface 44 thereby transforming the two piece walking beam 34 into a rigid beam. However, if it is desired to render the accelerator pump 32 inoperative, the cam member 56 may be rotated to the lowermost position illustrated in FIGURE 4 of the drawings whereupon the compression spring 30 will urge the actuator 28 to its second position at which it will stay until such time as the cam member 56 is again rotated to the uppermost position illustrated in FIGURE 1 of the drawings. Accordingly, it may be seen that the throttle lever 20 may be oscillated back and forth without the pivotal movement of the end section 38 imparting any pivotal movement to the end section 36. Therefore, the accelerator pump 32 has been rendered inoperative for operation by the throttle shaft 18.

The walking beam 34 is pivotally secured to the cover portion 58 of the carburetor 10 by means of a threaded fastener 60. Accordingly, it may be seen that when the cam member 56 is disposed in its uppermost position illustrated in FIGURE 1 that any pivotal movement of the end section 38 will be transmitted to the end section 36 and that the connecting rod 46 and the actuator 28 will be reciprocated inversely.

With attention now directed to FIGURES 6 through 9 of the drawings there will be seen a second conventional type of carburetor generally referred to by the reference numeral 64. The carburetor 64 includes a throttle shaft 66 and a throttle lever 68. However, an accelerator pump lever 70 is pivotally secured at one end to the throttle shaft 66 and a coil spring 72 has one end operatively connected to the throttle lever 68 and the other end connected to the pump lever 70 whereby the pump lever 70 is normally connected to the throttle lever 68 for movement with the latter and the throttle shaft 66 in a clockwise direction as viewed from the right side of FIGURE 6.

The carburetor 64 includes an accelerator pump 74 having a reciprocable actuator 76. An actuating lever 78 is pivotally secured to the accelerator pump 74 at one end by means of a pivot fastener 80 and the other end of the actuating lever 78 has one end of a pull rod 82 pivotally secured thereto. The other end of the pull rod 82 is pivotally secured to the free end of the pump lever 70. The actuator 76 is normally yieldably biased toward an

outermost position and accordingly, it will be noted that the spring 72 is stronger than the means biasing the actuator 76 toward its outermost position whereby movement of the throttle shaft 66 in a clockwise direction as viewed from the right side of FIGURE 6 and toward the open position will also effect inward movement of the actuator 76 and operation of the accelerator pump 74.

However, it will be noted that the pump lockout of the carburetor 64 is generally designated by the reference numeral 84 and that it includes a mounting bracket 86 which is secured to the accelerator pump 74 by means of the same fasteners 88 which are normally utilized to secure the cover 90 of the accelerator pump 74 to the base portion 92 thereof. The mounting bracket 86 is generally U-shaped in cross section and includes a pair of legs 94 and 96 interconnected by means of a bight portion 98. A pivot shaft 100 is rotatably supported by means of the legs 94 and 96 and a crank arm 102 has one end fixedly secured to the end of the pivot shaft 100 which projects through the leg 94. The end of the pivot shaft 100 which projects through the leg 96 is provided with an abutment arm 104 and it will be noted that the free end of the abutment arm 104 may be swung between an out-of-the-way position and an operative position engaged with the actuating lever 78 and preventing swinging movement of the latter in a direction to urge the actuator 76 inwardly. Accordingly, when the abutment arm 104 is pivoted to the position illustrated in FIGURE 6, the pump lever 70 will not pivot with the throttle shaft 66 and therefore the spring 72 absorbs the relative movement between the throttle lever 68 and the pump lever 70.

The leg 94 is provided with a pair of laterally struck stops 106 and 108 for engagement by the lever 102 in order to define limit positions of swinging movement thereof. A clamp assembly 110 is carried by the free end of the arm 102 and is engaged with the core 112 of a "Bowden" cable assembly generally referred to by the reference numeral 114 whose outer casing 116 is secured to the leg 94 by means of a clamp assembly 118. Accordingly, when the end of the core 112 remote from the clamp assembly 110 is pulled, the lever 102 will be swung from the position illustrated in solid lines in FIGURE 7 of the drawings to the position illustrated in phantom lines in FIGURE 7 of the drawings thereby rendering the actuating lever 78 inoperative.

With attention now directed to FIGURES 10 through 13 of the drawings there will be seen a still further conventional form of carburetor generally referred to by the reference numeral 122 which also includes a throttle shaft 124 on which there is secured a throttle lever 126. An accelerator pump lever 128 is also provided and is pivotally secured to the carburetor 122 by means of a pivot shaft 130. One end of the lever 128 is disposed for engagement with a cam lever 132 carried by the throttle shaft 124 and the other end thereof is provided with an abutment assembly generally referred to by the reference numeral 134. The carburetor 122 also includes an accelerator pump generally referred to by the reference numeral 136 having an actuator 138 in the form of a lever whose free end is disposed for engagement by the abutment assembly 134 upon movement of the throttle shaft 124 toward an open position. However, a third form of pump lockout is generally referred to by the reference numeral 140 and includes a mounting bracket 142 from which there is rotatably supported a cam shaft 144 provided with a cam lobe 146. One end of the cam shaft 144 has an actuating lever 148 secured thereto and a clamp assembly similar to clamp assembly 110 and referred to by the reference numeral 150 is carried by the free end of the actuating lever 148. One end of the core 152 of a "Bowden" cable assembly generally referred to by the reference numeral 154 is secured in the clamp assembly 150 and the housing 156 of the "Bowden" cable assembly 154 is secured to the mounting bracket 142 by

means of a clamp assembly generally referred to by the reference numeral 158 carried thereby.

The cam shaft 144 is rotatably supported by means of laterally directed journal portions 160 and 162 carried by the mounting bracket 142 and it will be noted that the mounting bracket 142 is secured to the accelerator pump 136 by means of fasteners 166 which are normally utilized to secure the cover 168 of the accelerator pump 136 to the base portion 170 thereof.

With attention again directed to FIGURES 1 and 2 of the drawings, the pivot fastener 60 comprises an abutment limiting swinging movement of the lever 48 in one direction and a clamp assembly 172 is carried by the free end of the lever and engages one end of the core 174 of a "Bowden" cable assembly generally referred to by the reference numeral 176. The housing 178 of the assembly 176 has its end remote from the carburetor 10 secured to a dashboard 180 by means of fasteners 182 and a knob 184 is secured to the end of the core 174 remote from the clamp assembly 172. Accordingly, actuation of the lever 48 may be effected by manipulation of the knob 184 between the two positions illustrated in solid and phantom lines in FIGURE 2 of the drawings.

From a comparison of FIGURES 4, 6 and 10 of the drawings it may be seen that the "Bowden" cable assemblies 176, 114 and 154 may be utilized to render the accelerator pumps 32, 74 and 136 inoperative whenever desired. Accordingly, when trying to start a flooded internal combustion engine, the accelerator pump may be advantageously rendered inoperative and the inoperativeness of the accelerator pump is also advantageous when traveling at highway speeds inasmuch as its operation is not needed and would result in a waste of fuel.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with a carburetor including throttle means movable between open and closed positions and an accelerator pump having an actuator movable between a first normally at rest position and a second position toward which said actuator is moved to effect operation of said pump, linkage means operatively connected between said throttle means and said actuator for movement of the latter toward said second position in response to movement of said throttle means toward said open position, said linkage means including a lost motion connection with said actuator, and control means operable independently of normal operation of said carburetor for selectively rendering said linkage means inoperative to effect movement of said actuator in response to movement of said throttle means, said linkage means including a walking beam pivotally secured to said carburetor intermediate the opposite ends of said beam for movement about an axis extending transversely of the latter, means operatively connecting the opposite ends of said beam to said actuator and said throttle means, said beam including a pair of opposite end sections pivotally secured together at adjacent ends and abutment means preventing pivotal movement of one of said end sections in one direction relative to the other end section past a predetermined position, said control means including means movable between a first inoperative position and a second position retaining said one end section in said predetermined position and against pivotal movement in the other direction away from said predetermined position.

2. The combination of claim 1 wherein said last mentioned means comprises cam means movably supported from the other end section and engageable with said one

end section to cam the latter into said predetermined position relative to said other end section.

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