Nov. 9, 1954 R. V. KOEHLER ET AL 2,693,712

CARBURETOR THROTTLE CONTROL LINKAGE

Filed Feb. 2, 1953 3 Sheets-Sheet 1

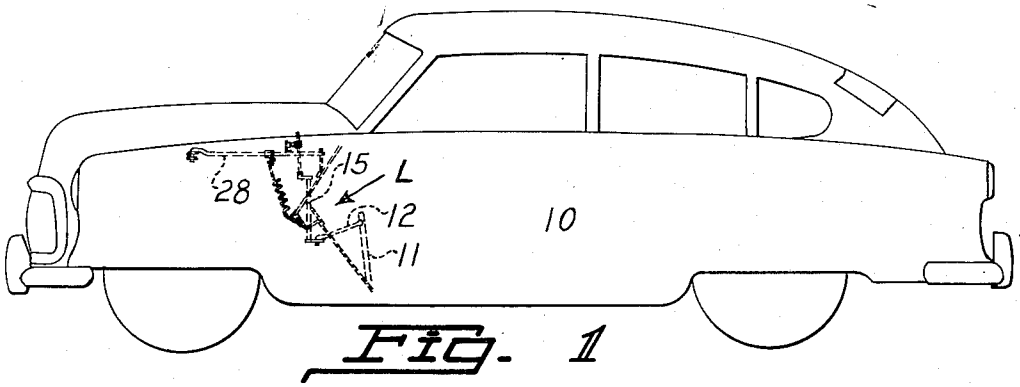


Fig. 1

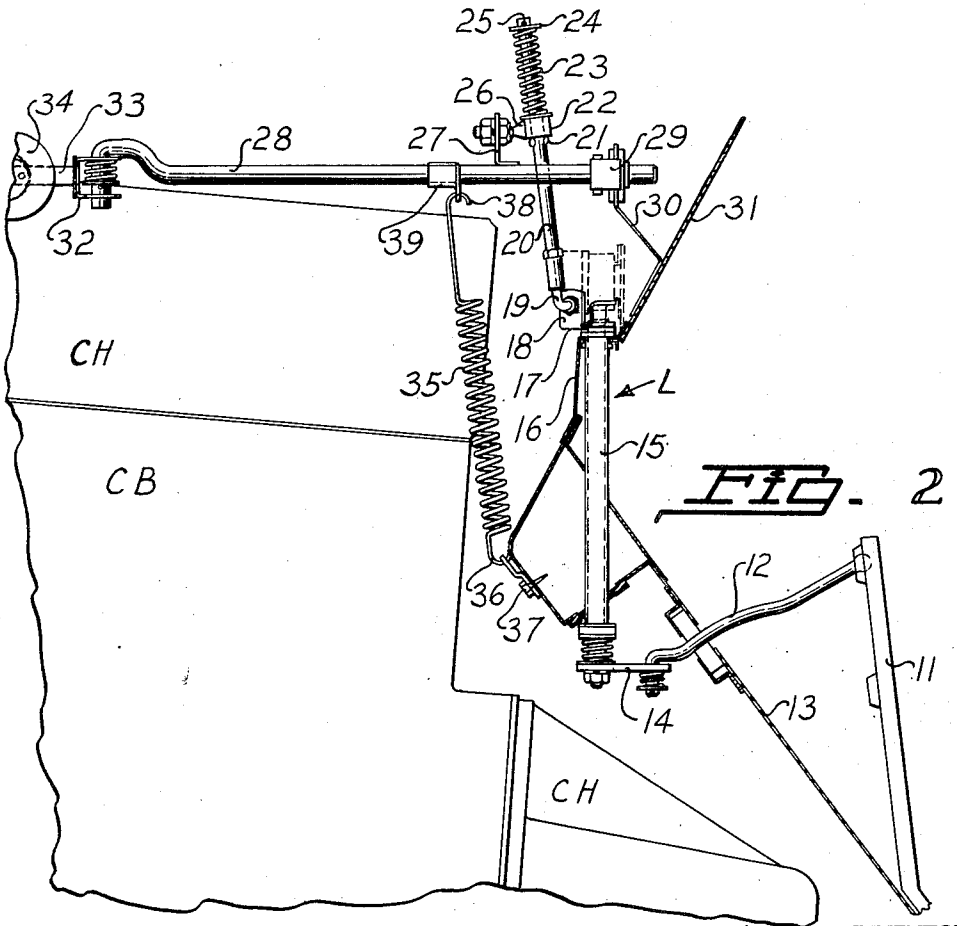


Fig. 2

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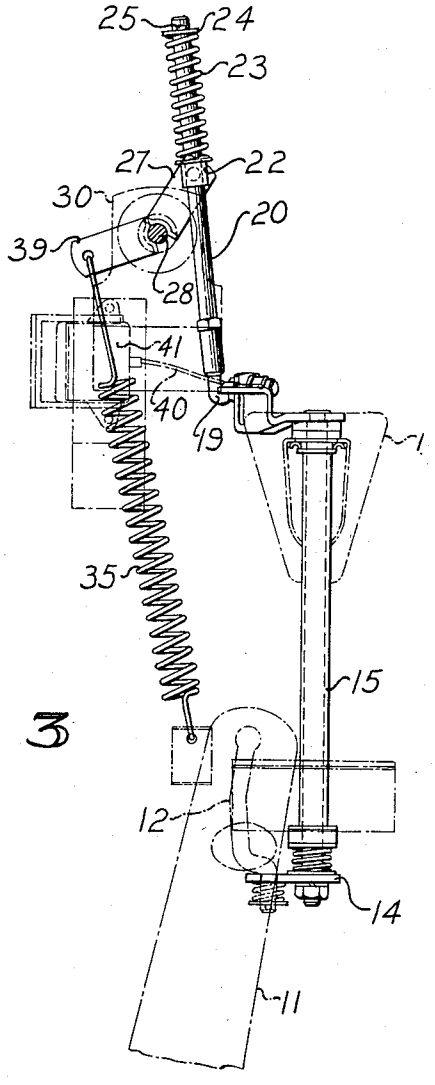


Fig. 3

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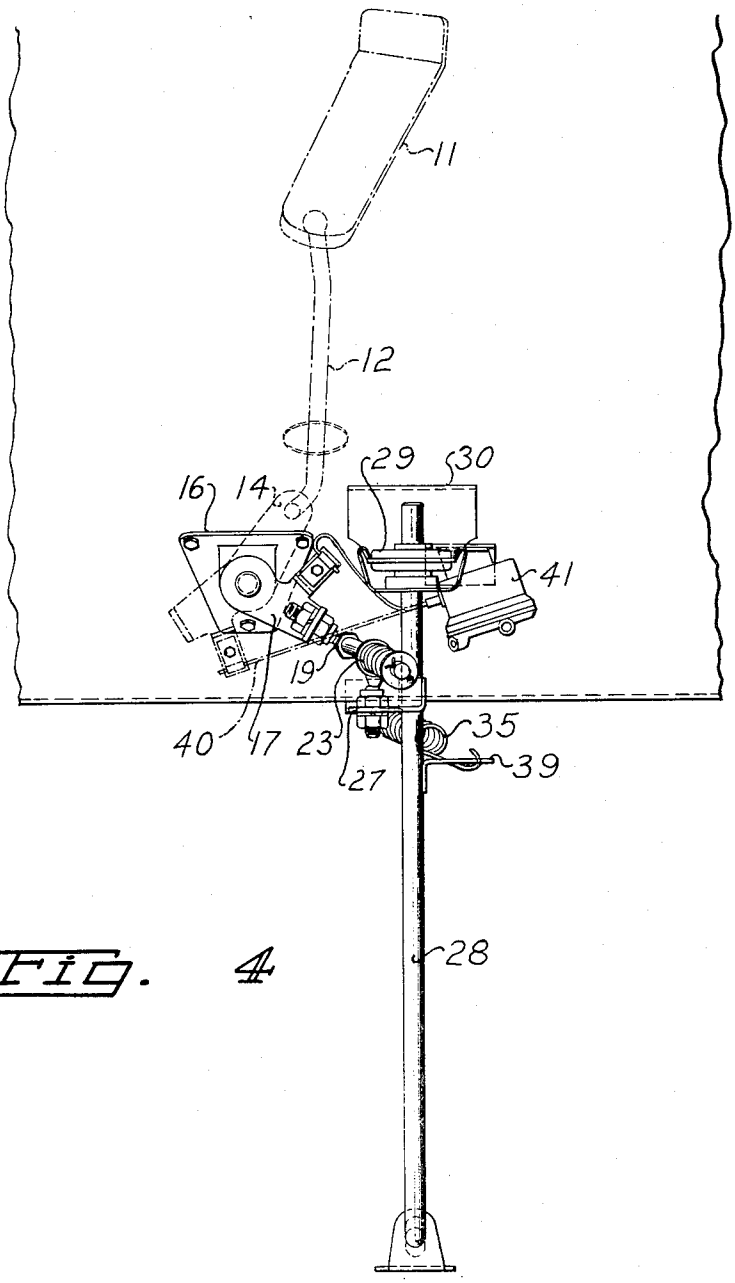


Fig. 4

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CARBURETOR THROTTLE CONTROL LINKAGE

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Application February 2, 1953, Serial No. 334,546

11 Claims. (Cl. 74—472)

This invention relates to a carburetor throttle control and more particularly to the linkage used for actuating a carburetor throttle valve.

It is an object of this invention to provide a carburetor throttle linkage which is used to actuate a so-called butterfly valve forming a part of the carburetor and is particularly adapted either under ordinary operating conditions or in overdrive as expediency requires.

It is another object of this invention to provide a carburetor throttle linkage that is more compact and easier to install than linkage of similar characteristics heretofore used. Linkages heretofore utilized presented an assembly problem of major importance in that when assembled in relation to the motor, toe board, and dash panel proper, they presented obstacles in the assembly of the body to the chassis. We contemplate, therefore, a carburetor throttle linkage arranged so that no obstacles are presented in the assembling of the body to the chassis. In addition we present a linkage which presents elements moving through a predetermined range with respect to actuating a butterfly valve in said carburetor which also provides a stop in said carburetor to present rotative movement of certain of said linkage elements and permit movement of other elements in said linkage to actuate an overdrive kick-down switch.

A further object of this invention is to provide a carburetor throttle linkage for a motor which is simple in design, economical to manufacture and easy to install in the ordinary motor vehicle.

We are aware of the various constructions heretofore used with respect to mounting carburetor throttle linkage in an internal combustion engine. Under the circumstances it will be manifest that it is our chief aim to generally improve upon prior structures of the general type by providing an arrangement characterized by appreciable refinements and structural improvements.

With our arrangement a great deal of time, labor, and loss due to damage is avoided. There is no opportunity of the linkage interfering or getting in the way of parts of an automobile body being assembled on the chassis. Previously, the linkage would be damaged if care were not exercised and such linkage did present an obstruction causing interference and a source of irritation in the final assembling.

The several objects, advantages and novel details of construction of the invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a plan view of an automotive vehicle with a portion of the invented subject matter disclosed in dotted lines.

Figure 2 is a side view of the apparatus as shown in Figure 1.

Figure 3 is a rear view of the invention as shown in Figure 2.

Figure 4 is a top view in perspective of the invention as shown in Figure 2.

Referring to Figures 1 and 2, the invention is shown as it may be used on an automotive vehicle designated by the numeral **10** showing the linkage L of the present invention in relation to the cylinder head C, the cylinder block CB and the clutch housing CH. The foot pedal **11**, provided with pedal rod **12**, extends through a toe board **13** where the free end of said rod is mounted on one end of a link **14**. The other end of said link **14** is mounted on one end of a link **14**. The other end of said link **14** is mounted on one end of an operating shaft **15** which projects upwardly and is secured vertically by a bracket member **16**. A second link or bracket member **17** is secured adjacent the top of said operating shaft and has an upwardly extending flange **18** apertured to receive an L-shaped ball joint **19** provided at its free end with an internally threaded section for threadedly engaging an operating rod **20**. The rod has a section **21** intermediate its free end, upset, to provide a stop for a collar **22** which normally bears against the bottom end of a tension spring **23** encircling the space between said section **21** and adjacent the free end of said rod. The spring is held on said rod and prevented from sliding off said rod by a top plate **24** and pin **25**.

The collar has a ball and extension **26** which moves within a ball socket formed within bracket **27**. The free end of said bracket is secured to a part of the circumferential surface of an accelerator shaft **28**. In operation, therefore, as will be explained more fully hereinafter, rotative movement of the operating shaft will cause rotative movement of the accelerator shaft.

The accelerator shaft rotates at one end within a rubber bearing **29** which is mounted on bracket **30** secured to the dash panel **21**. The free end of said accelerator shaft is formed in the shape of a hook which projects through apertures formed in a U-shaped extension **32**. This extension has a short pin **33** which extends into carburetor **34** and actuates a butterfly valve (not shown) but of well known design.

A coil spring **35** is secured at one end **36** to the bottom of the dash panel through any suitable fastening element **37**. The other end **38** of spring **35** is mounted on a bracket **39** which in turn is anchored to accelerator shaft **28**. In operation, therefore, the accelerator shaft rotates, the spring **35** expands and is under considerable tension enough to cause the accelerator shaft **28** to rotate back to normal position when the pressure on the pedal **11** is eliminated.

The linkage of the instant invention is particularly adaptable to mechanism provided with overdrive. The butterfly valve in the carburetor, and which is of well known construction, is provided with the usual accelerator shaft stop. This stop is arranged in the path of the pin **33** which is turned by rotative movement of the accelerator shaft. When the accelerator shaft has turned in approximately an 85 degree arc, the stop engages the pin and prevents any further movement of the accelerator shaft. Continued pressure on the pedal moves the link **14** operating shaft **15** and link **17**. The operating rod **20** still tends to push against the collar **22** but as the accelerator shaft **28** is locked against rotative movement beyond the 85 degree arc, the collar rises up against the spring, sliding upwardly along the operating rod **20** and compressing the spring **23**. Continued movement of link **17** after further rotative movement of the accelerator shaft **28** ceases, exerts tension on cable **40** which has one end secured to link **17** and the other end to an overdrive switch mechanism **41**. When such tension is exerted on the cable **40**, the switch **41** is actuated and the overdrive assembly is put in operation.

The action prior to the overdrive above is as follows. An operator depresses the foot pedal **11** thus forcing the pedal rod **12** to swing the link **14** and accordingly rotates the operating shaft **15**. The link **17**, being secured adjacent the top of the operating shaft **15**, swings or rotates with the operating shaft. Movement of the link **17** pushes against the control rod which, being pivotally mounted at one end through ball socket joint **19** with the link **17**, pushes against the collar **22** mounted on the operating rod **20**. This movement against said collar **22** causes movement in the ball joint **26** connecting bracket **27** and collar **22**. The collar **22** pushes against the bracket **27** and causes rotative movement of the accelerator shaft **28**. Such rotative movement of the accelerator shaft has a range of 85 degrees as determined by the pin and stop in the carburetor before the overdrive condition takes place as described above.

It is thought that the construction, manipulation, utility, and advantages of this invention will now be apparent to those skilled in this art without a more detailed description thereof.

The present embodiment of the invention has been

described in considerable detail merely for the purpose of exemplification since in actual practice it attains the features of the invention and the above description.

It will be apparent that changes in the details of construction, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed or sacrificing any of its advantages.

Having thus described our invention, what we claim is:

1. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link operatively connecting said lever and said operating shaft and rotatable about a vertical axis, a second link connecting the other end of said operating shaft and said operating rod and arranged to swing said rod upon movement of said first link and rotate said accelerator shaft, a U-shaped bracket having a forwardly extending pin mounted on one end of said accelerator shaft, the free end of said pin extending into said carburetor and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said accelerator shaft.

2. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link operatively connecting said lever and said operating shaft and rotatable about a vertical axis, a second link connecting the other end of said operating shaft and said operating rod and arranged to swing said rod upon movement of said first link and rotate said accelerator shaft, a pin secured to said accelerator shaft and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said carburetor shaft, said accelerator shaft locked against rotative movement at a predetermined point with said second link continuing its swinging movement and effecting sliding movement along said operating rod of mechanism connecting said rod and said accelerator shaft.

3. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, said operating shaft actuating said operating rod, a bracket mounted on said operating rod and connected to said accelerator shaft arranged to rotate said accelerator shaft upon movement of said operating rod, a pin secured to said accelerator shaft and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said accelerator shaft, said accelerator shaft locked against rotative movement at a predetermined point with said bracket affecting sliding movement along said operating rod.

4. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, said operating shaft actuating said operating rod, a bracket mounted on said operating rod and connected to said accelerator shaft arranged to rotate said accelerator shaft upon movement of said operating rod, a pin secured to said accelerator shaft and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said accelerator shaft, said accelerator shaft locked against rotative movement at a predetermined point, a coil spring encircling said operating rod and disposed between said bracket and butting against a stop secured adjacent the top of said rod, said bracket sliding along said rod and compressing said spring upon cessation of further rotative movement of said accelerator shaft.

5. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link operatively connecting said lever and said operating shaft and rotatable about a vertical axis, a second link connecting the other end of said operating shaft and said operating rod and arranged to swing said rod upon movement of said first link and rotate said accelerator shaft, a U-shaped bracket having a forwardly extending pin mounted on one end of said accelerator shaft, the free end of said pin extending into said carburetor, a stop provided in said carburetor to limit the rotative movement of said pin and accordingly the rotative movement of said accelerator shaft.

6. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link operatively connecting said lever and said operating shaft and rotatable about a vertical axis, a second link connecting the other end of said operating shaft and said operating rod and arranged to swing said rod upon movement of said first link and rotate said accelerator shaft, a bracket having a forwardly extending pin mounted on one end of said accelerator shaft, the free end of said pin extending into said carburetor, a stop provided in said carburetor to limit the rotative movement of said pin and the rotative movement of said accelerator shaft, a switch for actuating an overdrive mechanism, a cable having one end attached to said second link and another end attached to said switch, said cable actuating said switch upon movement of said second link after rotative movement of said accelerator shaft has been stopped.

7. In a motor vehicle, a carburetor and an overdrive switch, a throttle linkage to control said carburetor and actuate said switch, a foot pedal lever, said linkage carried between said lever and carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, said operating shaft actuating said operating rod which in turn rotates said accelerator shaft, a pin secured to said accelerator shaft and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said accelerative shaft, a stop provided within said carburetor which limits said predetermined movement of said pin and said accelerator shaft.

8. In a motor vehicle, a carburetor and an overdrive switch, a throttle linkage to control said carburetor and actuate said switch, a foot pedal lever, said linkage carried between said lever and carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link arranged between said operating shaft and said operating rod, said operating shaft swinging said operating rod which in turn rotates said accelerator shaft, a bracket secured to one end of said accelerator shaft, a pin secured to said bracket with its free end extending into said carburetor and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said accelerator shaft, a stop provided within said carburetor to limit said predetermined movement of said pin and said accelerator shaft, a cable member connecting said link and said switch, said cable actuating said switch upon continued swinging movement of said connecting rod after said rotative movement of said pin and said accelerator shaft has been stopped.

9. In a motor vehicle, a carburetor and an overdrive switch, a throttle linkage to control said carburetor and actuate said switch, a foot pedal lever, said linkage carried between said lever and carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, said operating shaft swinging said operating rod which in turn rotates said accelerator shaft, one end of said accelerator shaft mounted in a rubber bearing, the other end of said shaft secured with a U-shaped bracket, a pin mounted in said bracket and having one end extending within said carburetor, and arranged to rotate a predetermined distance within said carburetor upon rotative movement of said accelerator shaft, a stop provided within said carburetor and set to limit the rotative movement of said pin approximately 85 degrees and accordingly to limit the rotative movement of said accelerator shaft to approximately 85 degrees.

10. In a motor vehicle, a carburetor, a throttle linkage to control said carburetor, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link operatively connecting said lever and said operating shaft and rotatable about a vertical axis, a second link connecting the other end of said operating shaft and said operating rod and arranged to swing said rod upon movement of said first link, a collar and bracket combination encircling a portion of said operating rod and secured to said accelerator shaft, a

spring encircling said rod and arranged intermediate said collar and one end of said rod, said accelerator shaft rotatable upon swinging movement of said operating rod, a U-shaped bracket having a forwardly extending pin mounted on one end of said accelerator shaft, the free end of said pin extending into said carburetor, a stop provided in said carburetor to limit the rotative movement of said pin and accordingly the rotative movement of said accelerator shaft, a switch for actuating an overdrive mechanism, a cable having one end attached to said second link and another end attached to said switch, said cable actuating said switch upon movement of said second link after rotative movement of said accelerator shaft has been stopped, said collar compressing said spring upon locking against further movement of said accelerator shaft.

11. In a motor vehicle, a carburetor and an overdrive switch, a throttle linkage to control said carburetor and said switch, a foot pedal lever, said linkage carried between said lever and said carburetor, said linkage including an operating shaft, an operating rod and an accelerator shaft, a link operatively connecting said lever and said operating shaft and rotatable about a vertical axis, a second link connecting the other end of said operating shaft and said operating rod and arranged to swing said rod upon movement of said first link, a collar and bracket combination encircling a portion of said operating rod and secured to said accelerator shaft, a spring encircling said rod and arranged intermediate said collar and a stop at one end of said rod, said accelerator shaft rotatable upon swinging movement of said operating rod, a U-shaped

bracket having a forwardly extending pin mounted on one end of said accelerator shaft, the free end of said pin extending into said carburetor, a stop provided in said carburetor to limit the rotative movement of said pin to approximately 85 degrees and accordingly the rotative movement of said accelerator shaft to approximately 85 degrees, a cable member having one end secured to said switch and the other end secured to said second link, said cable actuating said switch upon movement of said second link after rotative movement of said accelerator shaft has been stopped, said collar moving upwardly along said rod upon continued swinging movement of said second link after rotative movement of said accelerator shaft has stopped and compressing said spring, a second spring having one end secured to said accelerator shaft and the other end secured to said vehicle and executing tension upon said accelerator shaft after rotative movement to return said accelerator shaft to normal in operative position.

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