May 5, 1959 A. H. WINKLER 2,885,194

ENGINE CONTROL MECHANISM

Filed Oct. 24, 1956 2 Sheets-Sheet 1

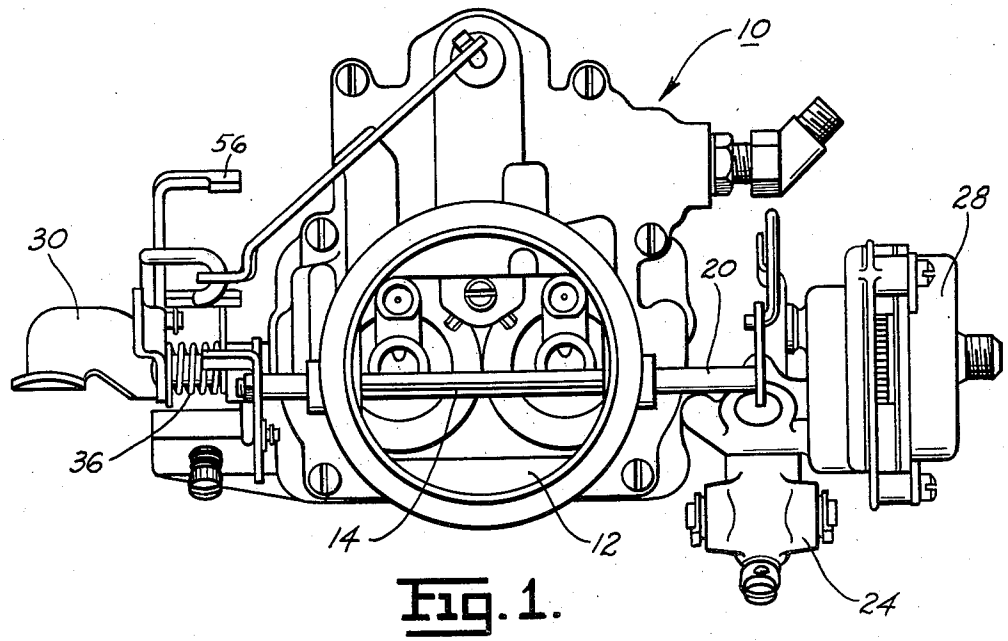


Fig. 1.

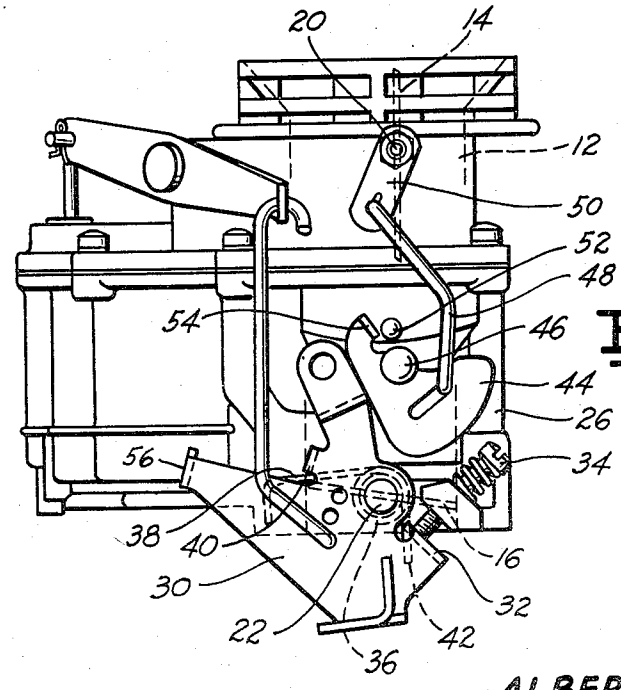


Fig. 2.

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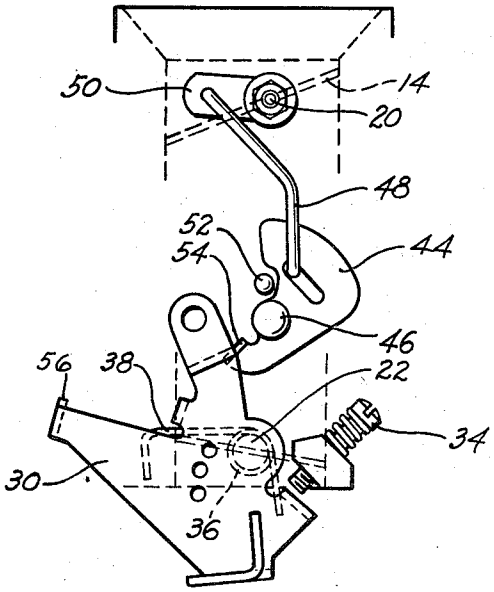


Fig. 3.

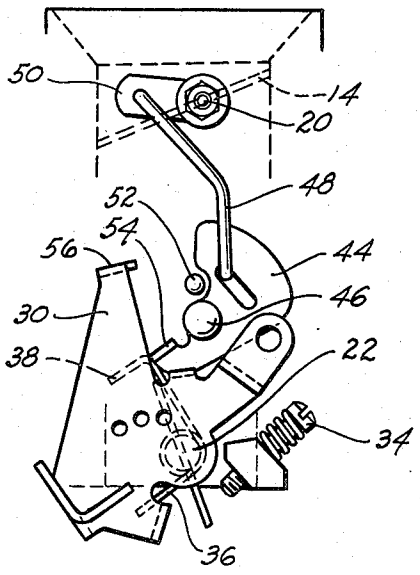


Fig. 4.

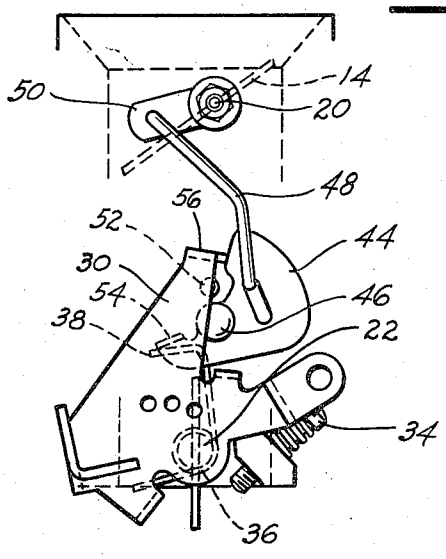


Fig. 5.

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2,885,194

ENGINE CONTROL MECHANISM

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Application October 24, 1956, Serial No. 618,097

4 Claims. (Cl. 261—52)

This invention pertains to carburetors and more particularly to carburetors having a starting control switch operably associated with the throttle such as, for example, is disclosed in U.S. Patent No. 2,492,340 issued December 27, 1949, or U.S. Patent No. 2,340,736 issued February 1, 1944.

The starting operation with such arrangements consists in closing the ignition switch and depressing the accelerator pedal. The latter operation closes the starting control switch which indirectly completes the starting motor circuit, as fully explained in the above mentioned patents.

In the majority of automotive carburetors, a connection is provided between the throttle and the choke valve whereby opening the throttle to the wide open position causes the choke valve to move to at least partially open position. Such an arrangement is provided to overcome a flooded condition of the engine should one occur during a starting period when the choke valve is yieldingly held in a closed position by the thermostat. Fully depressing a throttle partially opens the choke valve and permits an inflow of additional air to eliminate the flooded condition.

Where both such devices are used in the same installation it is necessary, in order to start the engine when cold, to depress the accelerator pedal sufficiently to close the starting switch but not to such a point as will force the choke valve to a partially open position. In U.S. Patents 2,340,736 and 2,393,440 there are shown means for sensibly indicating to the operator that the accelerating pedal has been depressed to the proper degree to facilitate starting. This sensible indication also notifies the operator that further depression of the accelerating pedal will cause the choke valve to be opened.

It is an object of the present invention to provide a relatively inexpensive and simple means for providing the operator with a sensible indication that the accelerator pedal has been sufficiently depressed to actuate the starting switch.

Other objects and advantages will be apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a top view of a carburetor embodying the invention;

Figure 2 is an end view of the carburetor shown in Figure 1;

Figure 3 is a fragmentary view of the carburetor showing the position of elements therein when the throttle and choke valve are closed;

Figure 4 shows the position of elements when the choke valve is closed and the throttle valve has been opened sufficiently to close the starting switch; and

Figure 5 shows the position of elements when the throttle valve is in wide open position and the choke valve moved to partially open position.

Referring now to the drawings and more particularly to Figure 1, there is shown a carburetor **10** having an induction passage **12** with a choke valve **14** and a throttle valve **16** mounted therein on shafts **20** and **22** respectively. A starting switch **24** is mounted on the body portion **26** of the carburetor for actuation in a manner more fully described in U.S. Patent 2,174,313.

An automatic choke mechanism **28** of a type described and claimed in my copending application Serial No. 504,937 filed April 29, 1955, now Patent No. 2,833,529 dated May 6, 1958, is also mounted on body **26** adjacent the starting switch.

A throttle lever **30** is mounted on shaft **22** and is provided with a turned over lug **32** which is formed for engagement with an adjustable abutment **34** located on body **26**. A resilient member or torsion spring **36** is looped about shaft **22** and is formed at one end with a cantilevered portion **38** which is restrained by a turned over lug **40** formed on lever **30**. The other end **42** of spring **36** is restrained by lug **32**. A lever **44** is mounted on a stub shaft **46** on body **26**. Lever **44** is connected for rotation with the choke through a lost motion connection including rod **48** to an arm or lever **50** which is secured to choke shaft **20**. Lever **44** is weighted to assume the position shown in Fig. 2 when the choke valve is open. Clockwise rotation of lever **44** is limited by a stop member **52** formed on body **26** which projects into the path of a turned over lug **54** formed on said lever.

Throttle lever **30** is adapted for connection with a conventional accelerator pedal (not shown) for actuation thereby.

In operation, the parts assume the position shown in Figure 3 when the choke and throttle valves are in closed position. Upon movement of the accelerating pedal sufficient to actuate the starting switch **24**, the parts assume the position shown in Figure 4. As shown therein, spring **36** is moved into engagement with lug **54** of lever 44 on a line of action passing substantially through shaft **46**. In the engaged position spring **36** adds an additional force to the force required to open the throttle and thereby provides a sensible indication to the operator that the accelerating pedal has been depressed sufficiently to actuate the starting switch. The point of engagement of spring **36** with lug **54** may be adjusted by bending the end of the cantilevered portion **38** of the spring or by bending the lug itself.

Upon further opening of the throttle valve, a lug **56** formed on throttle lever **30** moves into engagement with lever **44** rotating the latter clockwise sufficiently to move the choke valve **14** to partially open position. The position of parts after lug **56** has been moved into engagement with lever **44** is shown in Figure 5. As shown therein, lug **54** has been moved from the path of the end portion **38** of spring **36**. In this position spring **36** no longer resists the opening of the throttle.

In the control mechanism of my invention the lever **44** is positively positioned in the path of spring **36** when the choke valve is in closed position. The operation of my control is certain and reliable and substantially unaffected by dirt and other impurities. Adjustment of the control of the control may be quickly and simply accomplished. Furthermore, this improved operation and adjustment is accomplished with a simple, inexpensive direct acting resilient member which eliminates levers and more complex construction of the prior art devices.

Although a particular embodiment of my invention has been described, it will be understood by those skilled in the art that the objects of the invention may be obtained by the use of constructions different in certain respects from the disclosed without departing from the underlying principles of the invention.

I claim:

1. In a carburetor for an internal combustion engine having an induction passage with a throttle valve and

a choke valve mounted therein, a shaft, a choke lever mounted on said shaft for rotation with said choke valve, a shaft for said throttle valve, a throttle lever mounted on said shaft, means formed on said throttle lever for engagement with said choke lever at a predetermined throttle opening, a resilient member rotatable with said throttle valve adapted to directly engage said choke lever on a line of action passing through said first mentioned shaft, said member being constructed and arranged to engage said choke lever at a throttle opening less than said predetermined opening.

2. In a carburetor for an internal combustion engine having an induction passage with a throttle valve and a choke valve mounted therein, a shaft, a choke lever mounted on said shaft for rotation with said choke, a shaft for said throttle valve, a pair of spaced lugs operatively connected to said throttle shaft, and a torsion spring mounted on said throttle shaft and stressed between said lugs adapted to engage said choke lever on a line of action passing through said first mentioned shaft at a predetermined throttle opening.

3. In a carburetor for an internal combustion engine having an induction passage with a throttle valve and a choke valve mounted therein, a choke lever rotatably mounted on said carburetor, an operative connection between said choke lever and said choke valve, a shaft for said throttle valve, a throttle lever operatively connected to said throttle shaft and formed for engagement with said choke lever when said throttle is opened a predetermined amount, a resilient member operatively connected to and rotatable with said throttle lever formed at one end to engage said choke lever on a line of action passing through the axis of rotation of said choke lever when said throttle is opened less than said predetermined amount and said choke valve is in substantially closed position.

4. In a carburetor for an internal combustion engine having an induction passage with a throttle valve and a choke valve mounted therein, a shaft, a choke lever rotatably mounted on said shaft, means operatively connecting said choke lever with said choke, a shaft for said throttle valve, a throttle lever mounted on said throttle shaft, means formed on said throttle lever for engagement with said choke lever to open said choke valve when said throttle is opened a predetermined amount, a torsion spring having a free end and being mounted on said throttle shaft for rotation by said throttle lever whereby the free end of said spring engages said choke lever on a line of action passing through said first mentioned shaft at a throttle opening less than said predetermined amount.

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