Nov. 4, 1930. F. L. HAMMER ET AL 1,780,522

REMOTE CONTROL DEVICE FOR CARBURETORS

Filed July 19, 1928

Fig. 1.

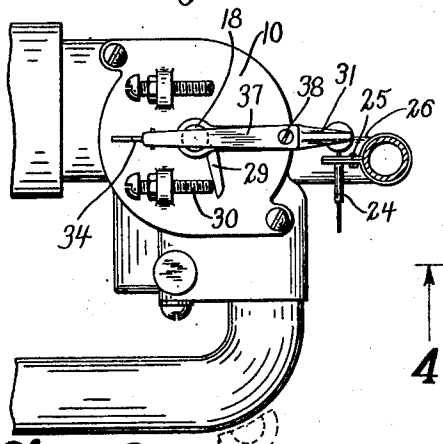


Fig. 2.

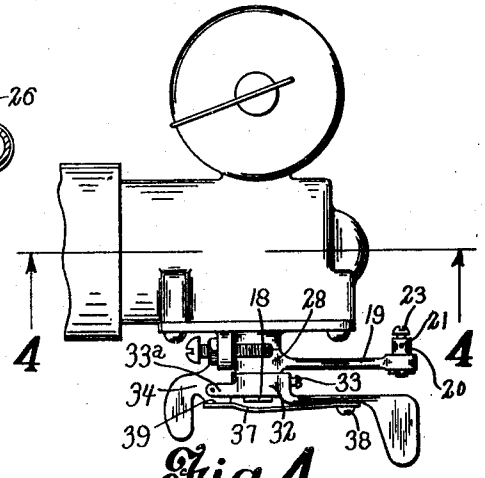


Fig. 3.

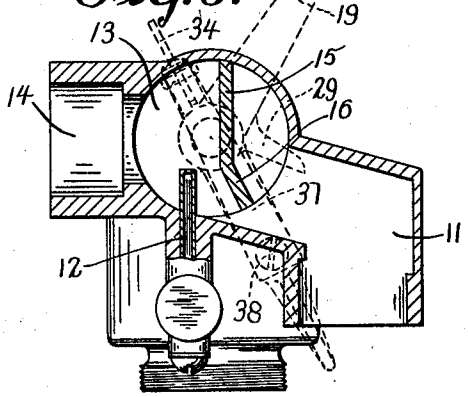


Fig. 4.

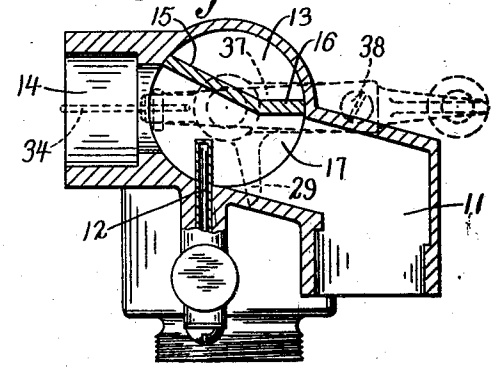


Fig. 5.

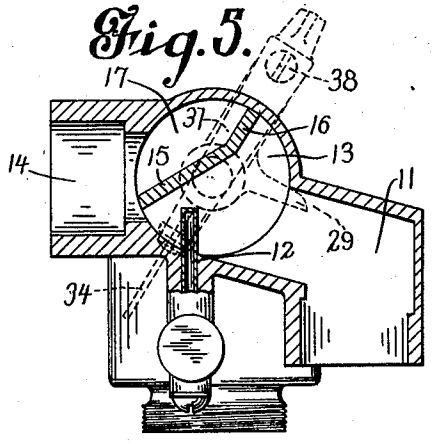
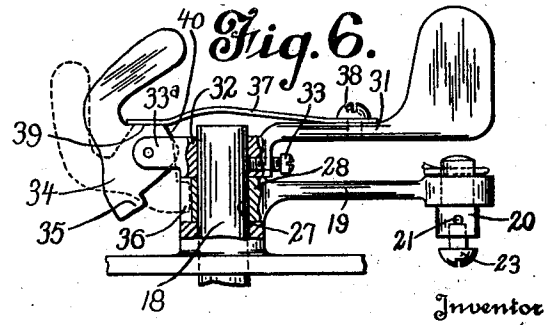


Fig. 6.



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Patented Nov. 4, 1930 1,780,522

UNITED STATES PATENT OFFICE

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REMOTE CONTROL DEVICE FOR CARBURETORS

Application filed July 19, 1928. Serial No. 294,021.

This invention relates to control devices for internal combustion engines, and more particularly to a means for controlling an internal combustion engine from a remote point.

In some classes of internal combustion engines, the control for what is commonly termed the "choke" or the means for enriching the mixture during the starting of the engine, is separate from the accelerating means, or the means which controls the volume as distinguished from the mixture of the charge passing into the engine. With certain types of engines, however, and particularly with those uesd upon motor-boats, the same valve structure, or at any rate, the same control lever is used for both the choking of the engine and the varying of the charge, so as to determine the speed, or in brief, the choke and acceleration are controlled by different adjustments of the same means.

It is especially desirable in connection with internal combustion engines used upon motor-boats that a speed control be provided so that it may be regulated from a point remote from the engine, and the present invention is particularly concerned with such devices although, of course, it is not necessarily limited to engines used in motor-boats. Such devices are also particularly useful in connection with so-called outboard motors.

One problem which arises in this connection, however, especially with engines which have a common control for the choke and accelerator, is that while it is desirable to control the acceleration from a remote point, it is usually convenient to control the choke from a point adjacent the engine, and for this reason it is often necessary to disconnect the remote control in order to choke the engine during the period of starting. Again it is sometimes found that when controlling such an engine from a remote point, if the lever or other controlling device is thrown through too great an arc of movement, the controlling valve will pass the full speed position and will be set in a partial choke position which will, of course, be detrimental to the best performance of the motor and because it is sometimes necessary to choke the engine it is not always feasible to place a stop upon the control lever to insure that the valve does not pass the full speed position and partially shut off the air of the mixture.

One object of our invention, therefore, is to provide a control device for carburetors, such that the acceleration of the engine may be efficiently controlled from a remote point, and when desired, the engine may be choked for starting purposes by means adjacent the motor itself.

Another object of our invention is to provide a remote control for accelerating the motor which may be conveniently and easily disconnected to permit the motor to be choked at will.

Still another object of our invention is to provide a remote control for accelerating an internal combustion motor which will be positively prevented from passing beyond the full speed position, and at the same time may readily be disconnected to allow the choke valve to be moved into choking position when this is desired.

Still another object of our invention is to provide separate speed control and choke members for a carburetor, so arranged that one may be operated from a remote point, and may be readily disconnected from the other so as not to interfere with the operation of the latter.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a side elevational view of a carburetor and associated parts, embodying our invention;

Fig. 2 is a top plan view of the same;

Fig. 3 is a sectional view through the carburetor;

Fig. 4 is a sectional view on line 4—4 of Fig. 2, showing the valve in a position different from that shown in Fig. 3;

Fig. 5 is a sectional view, similar to Figs. 3 and 4, showing still another position of the valve, and

Fig. 6 is a bottom plan view of a portion of

the carburetor showing the controlling levers.

To illustrate a preferred embodiment of our invention, we have shown a form of carburetor 10, into which air is admitted through the passage 11, and fuel through the passage 12, the fuel and air being mixed within the chamber 13 and passing to the engine through the intake 14.

Within the chamber 13 is a two winged valve having the wings 15 and 16 to control respectively the acceleration or the quantity of the charge passing to the motor, and the mixture of the charge delivered by the carburetor. For instance, the valve as shown in Fig. 3 is in what may be termed the choke position, as the wing 16 lies across the mouth of the air passage 11 and restricts the quantity of air passing into the chamber 13, so that a rich mixture is delivered to the engine through the intake 14. When the valve, however, is turned into the position shown in Fig. 5, the wing 15 partially obstructs the mouth of the intake 14, so as to allow a relatively small quantity of the charge of mixed fuel and air to pass to the engine. Likewise, when the parts are in the position shown in Fig. 4, the mouth of the intake 14 is unrestricted, allowing the full charge to pass to the engine, which is the high speed position of the valve, Fig. 5 showing a low speed position.

The valve wings 15 and 16 are in the form of carburetor shown, a part of a drum 17 rotatably mounted within the chamber 13 and secured to a shaft 18, which as shown in Fig. 6, for example, projects from the carburetor casing so that the control members may be mounted thereon. It will be understood that the carburetor heretofore described, is shown for the purpose of illustration only, and our invention is not limited in its application to any specific type of carburetor.

Upon the extended end of the stem or shaft 18 is loosely mounted a crank arm or lever 19, the free end of this arm carrying a pin 20 having a wire 21 secured thereto by means of the screw 23. This wire is designed to be passed through a hollow tube 24 to a remote point, at which point it may be connected to a suitable form of lever (not shown), for operation. The tube 24 will be secured at its end adjacent the motor to a clamp 25, mounted in turn upon a part 26 of the motor. It will be understood that upon reciprocation of the wire in a well known manner, the controller arm 19 will be moved in a clockwise and anticlockwise direction, as shown in Figs. 3 and 4.

The control arm 19 is mounted on the stem 18, by means of an opening 27 through a collar 28, which is a part of the controller arm and within which opening the stem is adapted to be received. Secured to or made integral with the collar 28 is a stop finger 29, shown more particularly in Fig. 1, which, in the position of the controller arm 19, shown in Figs. 1 and 4, is adapted to contact with an adjustable set screw 30, so as to prevent the arm 19 being drawn downwardly, as shown in these figures, beyond the full speed position of the valve, as shown in Fig. 4.

The stem 18 extends beyond the controller arm 19, which may be termed the accelerator arm, and has secured thereto a second controller arm 31, which may be termed the choke arm. This arm is also provided with an opening 32 which receives the end of the stem, and the arm is secured to the stem by means of a set screw 33. Pivoted to an ear 33^a upon the arm 31, is a detent 34, provided with a tooth 35, designed to enter a slot 36 formed in the collar 28 of the acceleration controller 19.

A spring, which in this instance is in the form of a leaf spring 37, is secured by the screw 38 to the choke controller 31, the free end of the spring bearing against a surface 39 of the detent to releasably hold it out of engagement with the acceleration lever 19, and this spring is also adapted to engage a similar surface 40 on the detent 34, to releasably hold the latter in the position of engagement with the acceleration controller 19, wherein the tooth 35 lies within the notch or recess 36.

As shown in full lines in Fig. 6, the acceleration controller 19 and the choke controller or arm 31 are disconnected. In this position of the parts, it will be apparent that the controller 19 will rock freely upon the stem 18 and cannot effect any movement of the latter or the valve wings 15 and 16 controlled thereby. When, however, the detent 34 is moved into the dotted line position shown in this figure, wherein the tooth 35 lies within the slot 36, the choke controller will be connected to the acceleration controller to move therewith, and hence a movement of the latter will effect a movement of the choke controller, and accordingly a movement of the stem 18 to which the choke controller is rigidly secured, and likewise, a movement of the valve wings 15 and 16.

The operation of our improvements is as follows: When it is desired to start the motor, the operator moves the detent 34 to the position shown in full lines in Fig. 6, and moves the controlling arm 31 down to the choke position of the valve shown in Fig. 3. It will be understood, of course, that if the two controller members were connected together, this could not be done, as the stop 29 would prevent such movement by contact with the stop screw 30. The engine may now be started and the valve moved to the proper position to keep the same in operation. After the engine is in operation and it is desired to control the same from a romote point, the arm 19 is moved until the slot 36 is opposite the detent 34, when the latter will be moved to the dotted line position shown in Fig. 6, and the tooth 35 engaged in the slot. The spring 37 will then contact with the sur-

face 40 on the detent to hold the latter in engaging position. It will be understood that with the parts in this position, the wire 21 may be reciprocated to cause a corresponding oscillation of the controller arm 19, which through its connection with the controller 31 and stem 18, will effect the movement of the valve wing 15 to operate the motor at the proper speed.

It has already been explained that if the wire 21 is moved in a direction to pull the arm 19 downwardly, as shown in Fig. 1, it cannot move the controllers 19 and 31 past the full speed position shown in Fig. 4, on account of the contact of the stop member 29 with the stop screw 30. The movement of the controller 19 upwardly from the position shown in Fig. 1, will, however, cause the movement of the valve to the slow speed position shown in Fig. 5.

It will be apparent that we have provided an efficient remote controlling device for internal combustion engines, such that the speed may be effectively regulated from a remote point, and at the same time the movement of the control valve beyond the full speed position into the choke position will be effectively prevented. At the same time the remote control device may be easily and readily disconnected, so that the motor may be choked when desired.

While we have shown and described a preferred embodiment of our invention, it is to be understood that it is not to be limited to all the details shown, but is capable of modification and variation within the spirit of the invention and the scope of the appended claims.

What we claim is:

1. In a device for controlling a carburetor valve, a controlling arm adapted to be connected to said valve, means for limiting the movement of said arm, means for actuating said arm from a remote point, a second controller arm connected to said valve and having an unlimited oscillatory movement, and means to disconnect said first named arm from the carburetor valve to permit movement of the latter by the second named arm beyond the position defined by the limiting means.

2. In a control device for a carburetor valve having a choke position, a full speed position and a slow speed position, an operating member secured to said valve, a controlling arm connected to said operating member, means to limit the movement of said arm to prevent movement of the valve beyond the full speed position in one direction, means for actuating said arm from a remote point, a second controlling arm connected to said operating member, and means for disconnecting the first arm from the operating member whereby it may be moved by the second arm beyond the position defined by the limiting member.

3. In a control for carburetor valves, an operating member for the valve, a pair of controlling members secured to the operating member, one of said controlling members having a free oscillatory movement, and the other having a limited oscillatory movement, and means for disconnecting said last named controlling member from the operating member to permit free movement of the latter by the controlling member having unlimited movement.

4. A carburetor valve having a choke positon and a speed regulating position, a pair of controlling levers each of which is adapted to be connected to the valve to move the same, and means for breaking the connection between one of said levers and the valve to permit the valve to move independently thereof.

5. A carburetor valve having a choke position and a speed regulating position, an oscillatable member secured to said valve, a controller arm secured to said member, a second controller arm loosely mounted on said member, means for operating said controller arm from a remote point, and means for connecting the two arms together.

6. A carburetor having a combined throttle and choke valve, an oscillatable member connected to said valve, a controller arm secured to said member, a second controller arm loosely mounted on said member and operable from a remote point, and means for connecting said second controller arm to and disconnecting it from said oscillatable member.

7. A carburetor having a combined throttle and choke valve, an oscillatable member connected to said valve, a controller arm secured to said member, a second controller arm loosely mounted on said member and operable from a remote point, and means for connecting said second arm to and disconnecting it from the first arm to permit said valve to be operated by said second arm or independently thereof.

8. A carburetor having a combined choke and throttle valve, and an operating stem for said valve, a controller arm secured to said stem, a second controller arm loosely mounted on said stem and operable from a remote point, and a detent mounted on one of said arms and engageable with the other thereof to connect said second arm to the stem.

In witness whereof, we have hereunto set our hands this 17th day of July, 1928.

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SWAN ESBORN.