June 3, 1924. 1,496,610

E. H. SHEPARD

CARBURETOR CHOKE VALVE CONTROL

Filed Oct. 4, 1923

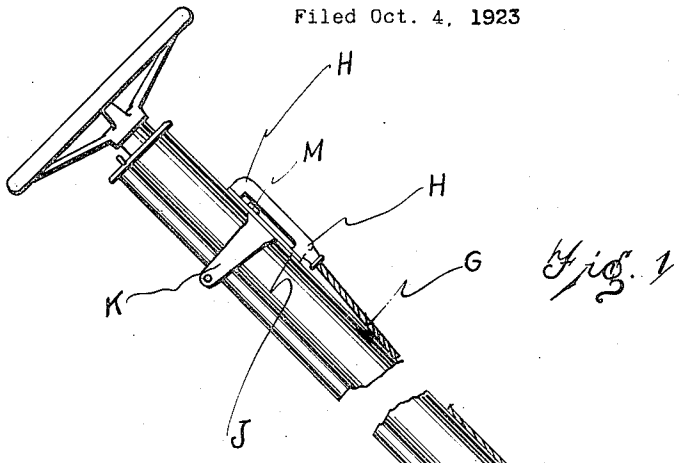


Fig. 1

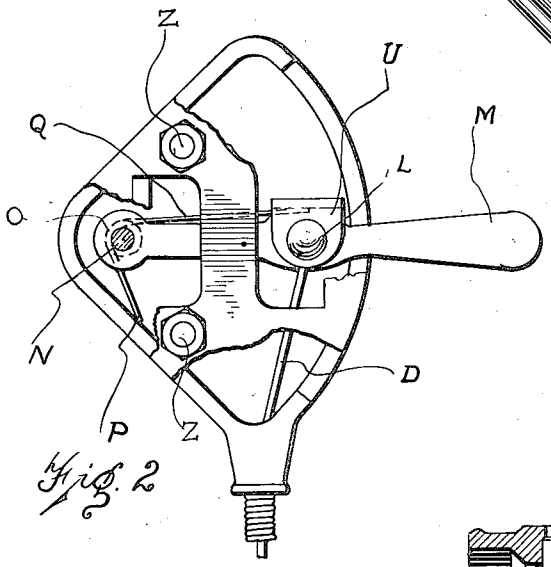
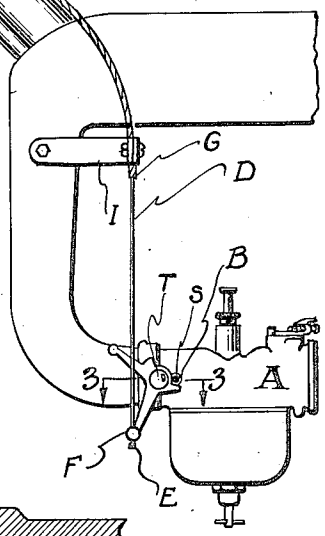


Fig. 2



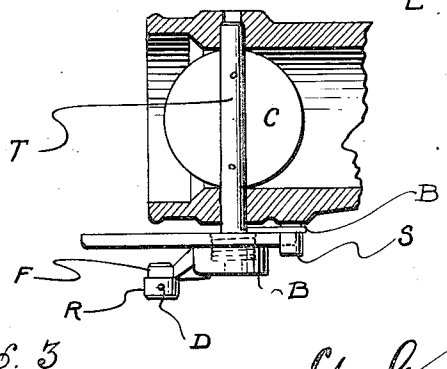


Fig. 3

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UNITED STATES PATENT OFFICE.

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CARBURETOR-CHOKE-VALVE CONTROL.

Application filed October 4, 1923. Serial No. 666,438.

To all whom it may concern:

Be it known that I, EVERETT H. SHEPARD, a citizen of the United States, residing at 196 McLean Ave., Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Carburetor-Choke-Valve Controls, of which the following is a specification.

This invention relates to the control employed in connection with the priming device of carburetors. It is very important that the priming device should be completely out of operation when the engine is running. For this reason it is very desirable that a spring be applied so that the priming device may normally be positively held out of action so as to be absolutely inoperative.

On the other hand, it is necessary that the priming device be in operation continuously and shall remain in operation regardless of the vibrations due to the engine, the car, and the road. The control of the priming device of a carburetor has usually been obtained by means of a wire and the priming device has been held inoperative by means of a spring and some form of ratchet, pawl, slotted quadrant, or even a friction device has been used in connection with the control so that it may be maintained stationary in one of its operative positions or in its inoperative position continuously.

The difficulty experienced with such devices was due to the fact that the more powerful the spring which rendered the device inoperative the more powerful and reliable must be the means whereby the device is maintained in operation, and the greater was the wear on such devices. This was particularly true when an attempt was made to utilize friction disks and the like.

The object of this invention is to remove this objection so that the force exerted by the spring may be selected independently of the means available for holding the device in its operative position. Specifically the object of this invention is to provide means whereby the slight friction of a Bowden wire in its flexible sheath may be sufficient to prevent the device moving under vibration.

Figure 1 shows the device mounted on the steering post of a Ford car and applied to a Holley carburetor.

Figure 2 shows a plan view of the control itself viewed from beneath with bottom plate partially removed.

Figure 3 shows a sectional plan view on the plane 3—3 of Figure 1, and illustrates the priming device itself.

In Figures 1, 2, and 3, A is the carburetor to which the device is applied, B is the spring maintaining the choke valve C in the wide open position, this being the priming device used on this carburetor. D is the wire controlling this choke valve. E is an enlargement or stop on the end of the wire. F is the choke valve lever. R is a cylindrical piece free to rotate in F and through which the wire D is drawn. The choke valve rod T is locked to the lever F which is stamped out so as to enclose the spiral spring B. The spring B engages with the lever F and is anchored onto the pin S on the carburetor A.

The tube G through which the wire D passes consists of a closely wound spiral spring of a well known type. This tube G at its upper end is shown connected to the casing H. The lower end of the tube G is connected by a bracket I to the engine (Figure 1). The housing H is fastened to a base plate J by means of the bolts Z, this base plate J is clamped tightly against the steering post by the pieces K.

The wire D terminates in the ball L, the ball L being freely connected to the lever M which is so made that the ball L may be rotatably held by an ear U stamped integral with the lever M and turned over at 180° so as to form a universal joint between the wire D and the lever M. The ear U is provided with a depression in which the ball L is free to revolve. The fulcrum of the lever M is the pin N riveted to the housing H, and a spring O is interposed between the lever M and the casing H and is wound around the pin N.

The two ends of this coil spring P and Q, are respectively anchored to the casing H and inside the ear U on the lever M, as shown in Figure 2. The torsion in the spring O is arranged to oppose the torsion of the spring B of the carburetor choke valve C, which tends to maintain the valve C in the wide open position and to put at all times the wire D in tension.

Operation. — When the carburetor is started the lever arm M is drawn up thereby pulling the wire D up through G. This causes the stop E on the arm D to contact with the arm F and so close the choke valve C against the action of the spring B. On releasing the manual pressure applied to the lever arm M the friction of the wire D in the tube G, together with the torsion of the spring O, maintains the choke valve C in its adjusted position against the action of the spring B which tends to open the valve C. When the car is driven away, and as the need for the priming means gradually diminishes, the lever arm M is pushed down in a counter-clockwise direction releasing the choke valve C, which, under the influence of the torsion spring B, returns finally to its wide open position.

Obviously no special friction means are required, the friction of the wire D in the tube G being ample as it is only the difference between the torsion of the spring O and the torsion of the spring B that has to be taken care of by the friction. If the spring O is eliminated special friction means have to be devised and it has been found impossible to maintain such friction devices uniform when manufactured in quantity. It will also be noticed that at no time is a push transmitted through the wire which is at all times maintained under tension, which is another desirable feature of this device.

An additional advantage of this arrangement is due to the fact that the priming device may be operated by merely exerting the pressure on the lever M sufficient to counter-balance the friction in the tube G, and assuming that the spring O exactly balances the spring B. In any case the effort is smaller than is the case where a friction device is provided sufficiently powerful to counter-balance the torsion of the spring B.

Further, the friction of the wire D in the tube G is the function of the tension of the wire C which is determined by the torsion exerted by the springs B and O. Hence when the torsion of the spring O is reduced by pressure applied on the lever M when opening the choke valve C, not only is the balance between the springs B and O upset so that the spring B predominates, but in addition the tension in, and therefore the friction of, the wire D in the tube G is reduced proportionally.

It follows that while driving away the choke valve C may be progressively opened by the slightest touch applied to the lever M and at the same time the valve C will be securely held against the action of the vibrations due to the engine, car, and road so that there will be no danger of stalling the car due to the premature opening of the choke valve C. The combination thus gives a very delicate control which at the same time offers a great resistance to the vibrations which tend to destroy the manual adjustment given by the driver to the priming and driving away device.

Obviously this combination of two opposing springs, connecting wire, and tubular guide could be applied to any other priming device that might be substituted for the choke valve C.

Obviously the control shown is adapted to controlling any other form of priming device and also for adjusting the ratio of fuel to air so that the device is generally adapted for the control of a carburetor, being especially adapted for controlling the abnormal adjustments necessary to enable a car to be driven away in cold weather, which abnormal adjusting devices are arranged so as to be positively opened when the restraining force is released.

What I claim is:

1. A carburetor controlling device comprising resilient means for yieldingly holding the controlling device in its normal position, a flexible operating connection and resilient means at the operating end of said flexible connection for counter-balancing said first resilient means.

2. A carburetor controlling device comprising resilient means for yieldingly holding the controlling device in its normal position, a flexible operating connection, resilient means at the operating end of said flexible connection for counter-balancing said first resilient means, frictional means whereby the controlling device is held in any given position.

3. The combination of a carburetor priming device, a spring tending to maintain said priming device inoperative, a control lever, a wire connecting said priming device to said control lever, a tubular guide for said wire, a spring associated with said lever tending to oppose said first mentioned spring.

4. The combination of a carburetor priming device, a spring tending to maintain said priming device inoperative, a control lever, a wire connecting said priming device to said control lever, a spring associated with said lever tending to oppose said first mentioned spring, frictional means whereby the controlling device is held in any given position.

In testimony whereof I affix my signature.

EVERETT H. SHEPARD.