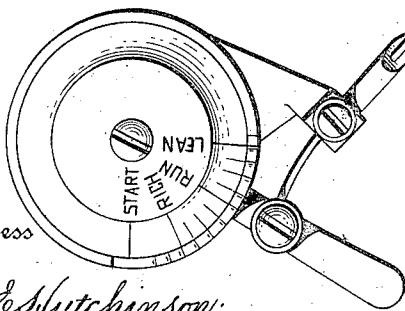
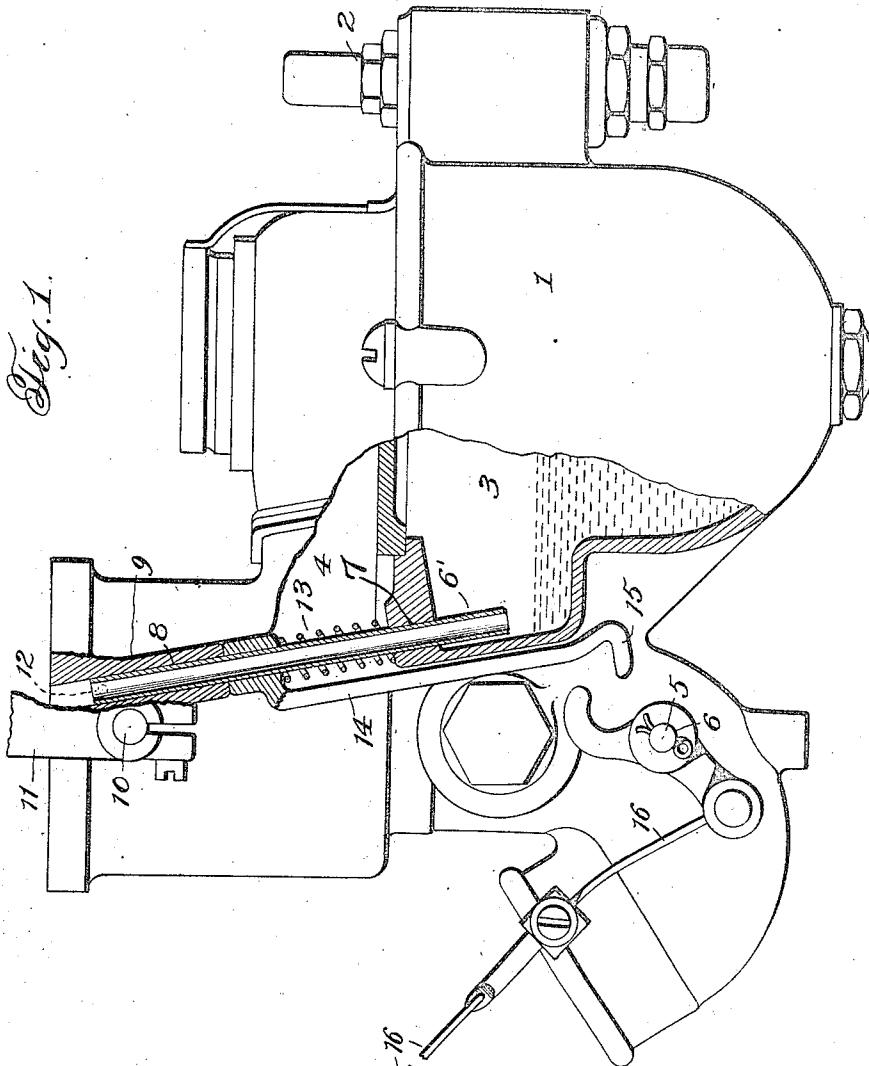


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CARBURETOR PRIMER.
APPLICATION FILED SEPT. 15, 1919.

1,407,356.

Patented Feb. 21, 1922.
2 SHEETS—SHEET 1.



Witness

Jas. Hutchinson:

By

Inventor:

John W. Swan,

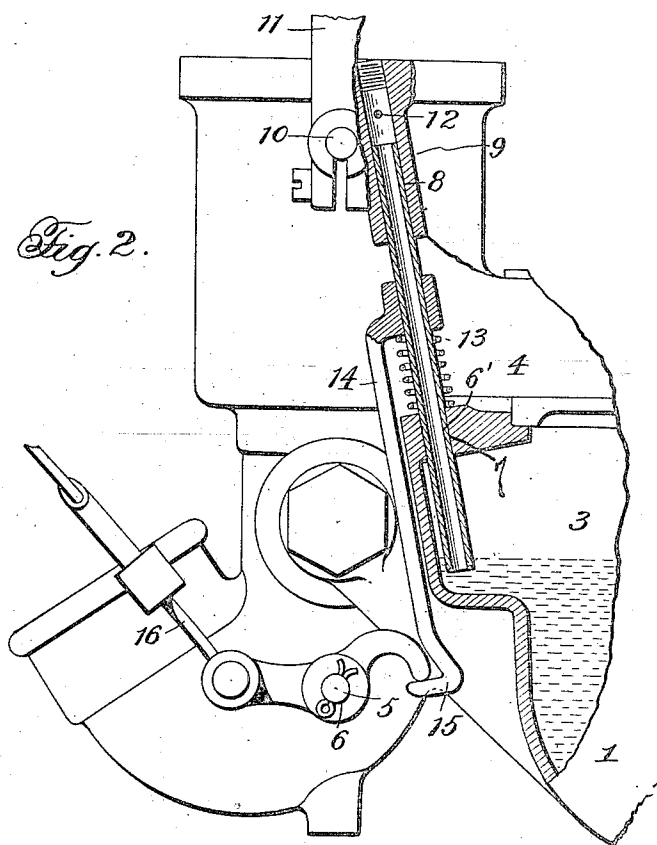
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UNITED STATES PATENT OFFICE.

JOHN W. SWAN, OF STAMFORD, CONNECTICUT.

CARBURETOR PRIMER.

1,407,356.

Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed September 15, 1919. Serial No. 223,371.

To all whom it may concern:

Be it known that I, JOHN W. SWAN, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Carburetor Primers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in carburetors for internal combustion engines.

It is well recognized that in starting an internal combustion engine when cold a very rich mixture, or, as a matter of fact, substantially raw fuel, must be introduced to the cylinder. To facilitate a rapid starting of an engine when in this condition, it is usually the practice to fill the pet cocks of each cylinder with fuel to be directly introduced thereto, or to employ an independent or auxiliary priming system by which fuel may be introduced to the cylinder. Both of these methods of priming are troublesome, the latter being expensive, while the former requires much time on the part of the operator, and both are far from being effective.

It is an object of the present invention to provide a carburetor having a priming device incorporated therein by which raw fuel may be introduced to the engine manifold to be delivered to the cylinders when starting the engine, the priming device being controllable by the operator from the driver's seat at all times.

It is a further object of the invention to provide a carburetor having a priming device that is normally out of feeding relation with the engine, but is adapted to be moved from its normal to a feeding position by an operating element accessible from the driver's seat.

It is still another object of the invention to provide a carburetor in which a single actuating means is provided for moving the priming device from its normal to a feeding position upon a starting of the engine when a raw fuel is to be delivered to the cylinders, which actuating device also controls the fuel-supply valve regulating the admission of fuel to the carburetor mixing chamber by which the ratio of fuel and air may be under instant control while driving.

The invention more specifically comprises a carburetor having a movable priming tube normally maintained above the fuel level of the carburetor float chamber, which is adapted to be shifted bodily into the fuel at one end and simultaneously establish a communication at its opposite end with a supply pipe leading to the engine manifold.

When retained in this position, substantially raw fuel is delivered to the engine cylinders from the float chamber, a release of the actuating means resulting in a return of the priming tube to its normal position where it is out of feeding relation with the engine.

In the accompanying drawings I have shown the preferred embodiment of the invention, but it will, of course, be understood that many changes can be made without departing from the spirit thereof.

In the drawings:

Figure 1 is a side elevation with parts in section; and,

Figure 2 is a fragmentary view showing a part of the carburetor in section.

Referring now more particularly to the drawings, wherein like reference characters indicate corresponding parts, the numeral 1 designates a carburetor which may be of any conventional type, having the usual gasoline feed 2, and float chamber 3 into which the gasoline is delivered. Leading from the float chamber is a fuel feed to the mixing chamber 4 of the carburetor, and to control the quantity of fuel entering the mixing chamber and thereby regulate and control the condition of the mixture, a needle valve is employed, being operated by the oscillating lever 5 mounted upon the valve operated spindle 6. It will be understood that this valve is merely for the purpose of controlling the quantity of fuel that is to be admitted to the mixing chamber during the operation of the engine, so that a lean, rich, or perfect mixture may be provided for introduction to the engine cylinders when the engine is under way and in operation.

Disposed adjacent the float chamber on one side thereof and mounted for a restricted movement is a priming tube 6', the lower end thereof extending through an aperture 7 in the portion passing through the float chamber, while the upper end of

the tube extends a bore 8 in the supply pipe or conduit leading to the engine manifold. The carburetor is provided with the usual throttle valve mounted upon the spindle 10 and operated by the arm 11 connected with the usual foot and hand throttle disposed near the driver's seat.

Passing through the feed passage 9 above the throttle valve is a transverse aperture 12, normally closed by the priming tube 6'. This aperture enters the feed passage 9 above the carburetor and is for the introduction of raw fuel thereto upon the starting of the engine. The priming tube 6' is normally maintained out of feeding relation with the feed passage 9 by the action of the coil spring 13 seated upon the surface of the top of the float chamber 3, bearing thereagainst at one end, while the upper end of the spring impinges against the under surface of an operating arm 14 fixedly attached to the priming tube so that a movement thereof causes a complementary movement of the tube, the operating arm 14 near its lower end having a hooked end 15 adapted to be engaged and operated by the lever 5 by a means which will be later described. It will therefore be seen, that the priming tube is normally urged into an inoperative position, as disclosed in Fig. 1, by the action of the spring 13, the lower end thereof at this time being raised beyond the surface of the fuel in the float chamber 3, while the upper end is such a position as to close the feed orifice 12, the upward movement of the priming tube being limited by the engagement of the arm 14 with the walls of the bore 8.

The lever 5 is operated preferably by a wire 16 attached thereto at one end, while the opposite end of the lever is connected with any suitable control device preferably of the nature disclosed in my co-pending application, Serial No. 319,878, filed August 26, 1919. An operation of this wire in one direction causes a movement of the needle valve controlled by the spindle 6 regulating the supply of fuel from the float chamber to the mixing chamber 4 of the carburetor so that a lean, rich or normal mixture may be had at the will of the operator when the engine is under way, the character of the mixture depending upon the different conditions encountered, it being observed, however, the mixture is under instant control and variable as may be desired. When the engine is cold, to start the same, it is, of course, preferable to introduce substantially raw material to the cylinders to facilitate an easy starting, which is now usually accomplished by the filling of cocks on each individual cylinder. This method is troublesome, requiring much time and on the whole is not satisfactory.

In the present invention when it is desired to start an engine with which the car-

buretor is attached, the feed wire 16 is moved to the position shown in Fig. 2, it being observed that the outer end of the lever 5 has engaged the hooked portion of the arm 14, drawing the priming tube 6' downward until its lower end is immersed in the body of fuel in the float chamber 3, the upper end of the tube having passed below the feed aperture 12 so that when the engine is turned over, raw fuel is drawn directly from the float chamber through the tube 6, the orifice 12 and into the feed passage 9 above the throttle valve of the carburetor, the throttle valve being preferably closed upon the starting of the engine. The priming tube is maintained in this position until the engine has been started and then the lever 5 is moved, the spring 13 urging the priming tube upwardly to this normal position, as shown in Fig. 1, wherein the lower end of the tube is raised above the surface of the level of the fuel in the float chamber, the primer, when in this position, being inoperative, as no fuel can be fed from the float chamber to the passage 9.

As the engine becomes heated, or under different conditions, it is necessary to regulate the mixture, and in the present invention the single operating wire 16 is employed for moving the primer into a feeding relation, and for controlling the quantity of fuel admitted to the mixing chamber through the needle valve which may be of the usual construction operated by the spindle 6. It will be observed that when the wire is moved in one direction, serving to move the end of the lever 5 downwardly, the hooked end of the primer is engaged causing the priming tube to be moved into a feeding relation, as shown in Fig. 2; while if the wire is moved in an opposite direction, the free end of the lever 5 is raised, allowing the priming tube to return to its normal position under the influence of the spring 13, a continued movement of the lever having no influence whatever on the hooked end 15 of the arm 14, serving to operate the needle valve controlling the fuel supply to the carburetor alone, thus permitting a mixture to be formed within the carburetor chamber that may be rich, lean or normal as may be desired.

Having thus described the invention, what I claim is:

1. In a carburetor, the combination with a fuel chamber, of a mixing chamber having a throttle valve, a fuel passage communicating with said mixing chamber above the throttle valve, a valve controlling the supply from the fuel chamber to the mixing chamber, a priming tube leading from the fuel chamber to the fuel passage above the throttle valve, and a single means for controlling the passage of fuel through the priming tube and the fuel supply to the mixing chamber.

2. In a carburetor, the combination with

a fuel chamber, of a mixing chamber having a throttle valve, a fuel passage communicating with said mixing chamber above the throttle valve, a valve controlling the supply from the fuel chamber to the mixing chamber, a priming tube leading from the fuel chamber to the fuel passage above the throttle valve, and a single means for controlling the passage of fuel through the priming tube and the fuel supply to the mixing chamber, said means including a shiftable member and an operating element connected therewith.

3. A carburetor having a float chamber and a mixing chamber, a throttle valve for said carburetor, a fuel passage leading from the carburetor to the engine, a priming tube carried by said carburetor, means for normally maintaining said priming tube out of feeding relation with the carburetor, and means for bodily moving the priming tube whereby the lower end thereof is immersed in the fuel in the float chamber for delivering fuel directly from the float chamber to the fuel passage at a point above the throttle valve.

4. In a carburetor, the combination with a float chamber, of a throttle valve for said carburetor, a fuel supply establishing communication between the carburetor and an engine, a priming tube carried by said carburetor and having a communication with the fuel passage above the throttle valve, means for normally maintaining the priming tube out of feeding relation with the fuel passage and the float chamber, and means for moving the priming tube bodily into feeding relation with the float chamber and the fuel passage.

5. A carburetor having a float chamber and a fuel passage leading from the carburetor to the engine, a throttle valve, a slidable priming tube carried by said carburetor and normally out of feeding communication with the fuel passage, and means for sliding said tube for establishing communication between said fuel passage and the float chamber for delivering fuel directly from the fuel chamber to the fuel passage beyond the throttle valve.

6. A carburetor having a float chamber and a fuel passage leading from the carburetor engine, a throttle valve, a priming tube carried by the carburetor and a communication between said carburetor and the fuel passage beyond the throttle valve, means for normally maintaining the priming tube out of feeding relation with the passage, and means for moving the priming tube bodily so as to place one end thereof into the fuel in the float chamber, and to simultaneously establish communication between the upper end thereof and the fuel passage-way for delivering substantially raw fuel to the fuel passage beyond the throttle valve.

7. In a carburetor, the combination with a fuel chamber, of a carbureting chamber and means for delivering fuel thereto, means for varying the quantity of fuel admitted to the carbureting chamber, a fuel passage through which the mixture passes prior to being delivered to the engine, a throttle valve controlling the supply from the carbureting chamber to the fuel passage, a priming tube leading from the fuel chamber and having a communication with the fuel passage above the throttle valve, and a single operating means for controlling the passage of fuel through the priming tube and the fuel supply to the carbureting chamber.

8. In a carburetor, the combination with a fuel chamber, of a carbureting chamber and means for delivering fuel thereto, means for varying the quantity of fuel admitted to the carbureting chamber, a fuel passage through which the mixture passes prior to being delivered to the engine, a throttle valve controlling the supply from the carbureting chamber to the fuel passage, a priming tube leading from the fuel chamber and having a communication with the fuel passage above the throttle valve, and a single operating means for controlling the passage of fuel through the priming tube and the fuel supply to the carbureting chamber, said means comprising a shiftable lever having a portion adapted to engage an operating arm on the priming tube when moved in one direction but to exert no influence on said arm when moved in an opposite direction, and to cause an operation of the valve controlling the passage of fuel to the carbureting chamber.

9. A carburetor having a float chamber and a throttle valve, a fuel passage leading from the carburetor above the throttle valve, a priming tube carried by said carburetor and a communication between the tube and the fuel passage when said tube is in feeding relation therewith, means for normally maintaining the tube out of feeding relation with the passage-way comprising a resilient member cooperating therewith, and means for moving the tube whereby the lower end is immersed in the fuel in the float chamber and communication between the passage and the tube simultaneously established.

10. A carburetor having a float chamber and a throttle valve, a fuel passage leading from the carburetor above the throttle valve, a priming tube carried by said carburetor and a communication between the tube and the fuel passage when said tube is in feeding relation therewith, means for normally maintaining the tube out of feeding relation with the passage-way comprising a resilient member cooperating therewith, means for moving the tube whereby the lower end is immersed in the fuel in the float chamber and communication between the passage and the tube

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simultaneously established said means comprising an operating lever connected with the tube and having an engaging portion at one end, and a shiftable arm cooperating
5 with said engaging portion.

11. In a carburetor, the combination with a fuel chamber and a throttle valve for said chamber, a fuel passage establishing communication between the carburetor and an
10 engine, a priming tube carried by the carburetor and a normally closed communication between the fuel passage and the priming tube, and means for establishing a feeding relation between the priming tube and
15 the fuel passage comprising an arm connected with the priming tube and an operating lever associated with said arm for shifting the same to correspondingly shift the priming tube into a fuel feeding position to
20 deliver fuel directly from the float chamber to the fuel passage.

12. A carburetor having a fuel chamber and a fuel passage leading from the carburetor to the engine, a movable priming
25 tube communicating with the fuel chamber and normally out of communication with the fuel passage, and means for operating the

tube for establishing communication between the fuel chamber and fuel passage.

13. A carburetor having a fuel chamber 30 and a fuel passage leading from the carburetor to the engine, a spring controlled movable priming tube communicating with the fuel chamber and normally held out of communication with the fuel passage by the
35 spring, and means for operating the tube for placing the spring under tension and establishing communication between the fuel chamber and fuel passage.

14. A carburetor having a fuel chamber 40 and a fuel passage leading from the carburetor to the engine, a movable priming tube for establishing communication between the fuel chamber and fuel passage, means for normally holding the lower end of the tube 45 above the fuel level, and means for lowering the end of the tube into the fuel.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN W. SWAN.

Witnesses:

JAS. FERRISS,
H. E. SQUIRE.