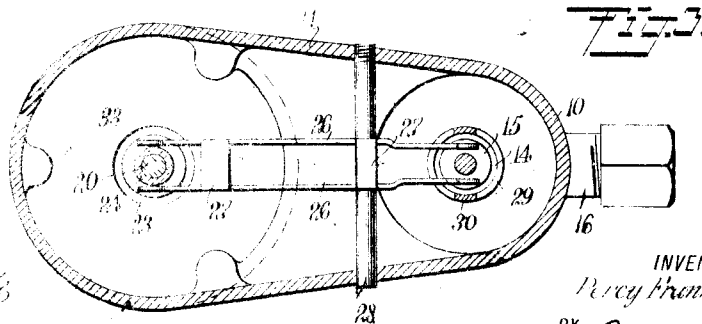
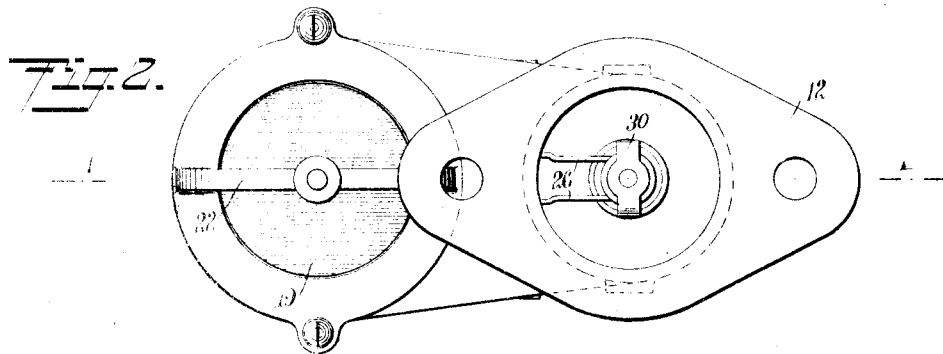
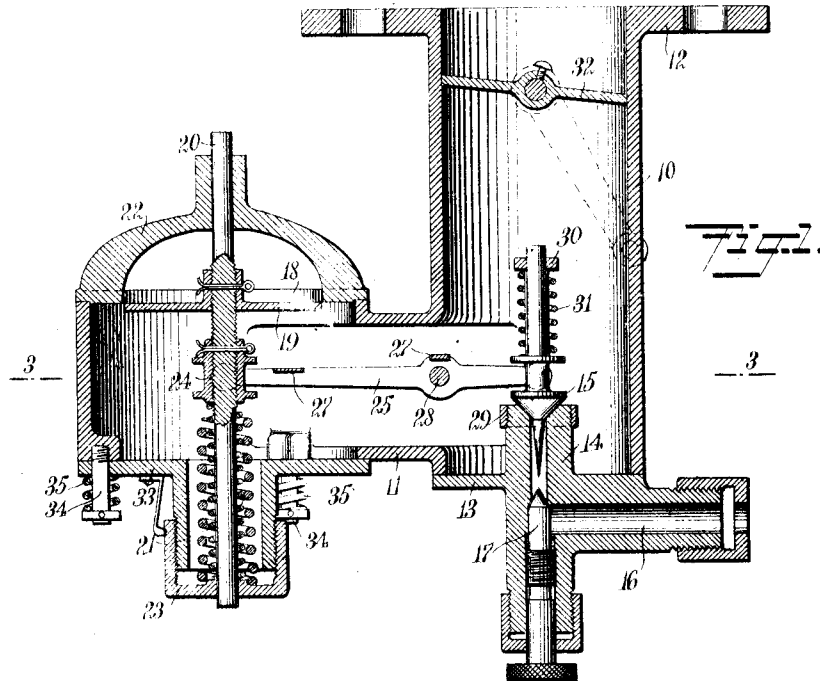


P. F. COLE.
CARBURETER.
APPLICATION FILED AUG. 12, 1910.

1,066,080.

Patented July 1, 1913.



WITNESSES:
Wm. J. [Signature]
B. M. Fairbank

INVENTOR
Nancy Franklin Cole
BY *Mumford*
ATTORNEYS

UNITED STATES PATENT OFFICE.

PERCY FRANKLIN COLE, OF NEW YORK, N. Y.

CARBURETER.

1,066,080.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed August 12, 1910. Serial No. 576,818.

To all whom it may concern:

Be it known that I, PERCY FRANKLIN COLE, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Carbureter, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in carbureters adapted for use in connection with internal combustion engines, and relates more particularly to a simple type of carbureter in which the air is caused to pass a vaporizing nozzle on its way to the engine.

The main object of my invention is to simplify the carbureter by eliminating the float chamber and float valve commonly employed, and to automatically control the flow of gasoline or other liquid fuel in accordance with the suction pressure of the engine. In my improved carbureter, I provide an air inlet valve which is opened by the difference in pressure upon opposite sides thereof,—in other words, by the suction pressure of the engine, and so connect this valve to a valve controlling the liquid fuel, that when the air inlet valve closes, the liquid fuel valve will also close, to prevent any waste of the fuel, and the extent to which the liquid fuel valve is opened, will be in direct accordance with the suction pressure exerted at the air inlet valve.

A further important feature of my invention relates to the means employed for preventing injury to the carbureter or connections in case of back fire.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a longitudinal section through a carbureter constructed in accordance with my invention, said section being taken approximately on the line 1—1 of Fig. 2; Fig. 2 is a top plan view of the carbureter; and Fig. 3 is a transverse section on the line 3—3 of Fig. 1.

In the specific form of carbureter illustrated in the accompanying drawings, I provide a main body or casing having two arms or branches 10 and 11, substantially at right angles to each other. The main branch 10 is substantially cylindrical in form and is adapted to normally occupy a vertical posi-

tion. At the upper end of this branch, is an apertured flange 12, by means of which the carbureter may be connected to the inlet pipe or the filler port of the engine, and at the lower end is a closure or end wall 13 carrying the fuel inlet nozzle. As illustrated, this end wall has an upwardly-extending nozzle 14 into the upper end of which seats a valve 15, which extends centrally and longitudinally of the branch passage 10. Liquid fuel may be delivered to the nozzle through a passage 16, which may be connected at its outer end in any suitable manner, to a fuel supply pipe, and which may be controlled by a suitable needle valve 17. The branch 11 extends substantially at right angles to the branch 10, and is normally disposed in a substantially horizontal position. The two branches communicate adjacent the lower end of the branch 10, opposite to the nozzle 14, and the branch 11 upon its upper face, has an air inlet port 18, through which air may enter to the branch 11, and thence flow through said branch to the branch 10, past the nozzle 14, and out the upper end of the branch 10 to the engine. This port 18 is controlled by a valve plate 19, secured to a valve stem 20, which is normally pressed upwardly by a coil spring 21. Encircling the coil spring 21 is a heavier spring 36, the lower side of which rests on the cap 23 and the upper end of which is spaced a slight distance from the collar 24 when the valve 19 is closed. This arrangement of two springs will give better results than merely using the fine spring 21, for the reason that the fine spring may be readily actuated by the slight suction pressure in the carbureter in starting the motor, and this spring also allows the motor to throttle down much slower. When the motor has gained the proper speed, the sleeve 24, due to the increased suction from the engine, will come down a greater distance than at first, contacting with the heavier spring 36 which will then control the amount of air and fuel admitted to the carbureter. The valve stem is guided at its upper end, in a suitable spider 22 of slightly larger diameter than the diameter of the valve plate 19, so that as the valve 15 wears down, the spider 22 will not prevent the positioning of the valve 22 on its seat, and at its lower end extends through an adjustable cap 23, which constitutes not only a guide for the valve stem, but also a stop for the springs 21 and

36. By adjusting the cap, the tension of the spring may be varied, and the required suction pressure for opening the valve 19 regulated. Beneath the valve plate 19 the valve stem carries a collar 24, which constitutes a stop for the upper end of the springs 21 and 36, and also serves to receive the yoke on the end of a lever 25. This lever may be formed of a piece of sheet metal cut to form two substantially parallel side members 26, connected by a plurality of integral cross bars 27, and apertured to receive a transverse pivot pin 28. The pivot pin may be mounted in the sides of the branch 11, and the side members of the lever at each end, are spaced apart to engage between flanges on the collar 24, and between flanges on the fuel valve 15. The fuel valve may be guided by a collar 29 threaded to the upper end of the nozzle 14 and having an inverted U-shaped standard 30 apertured at its upper end to receive the upper end of the valve stem. A spring 31 may be employed in connection with the valve 15, to hold the latter in its closed position.

The parts normally occupy the positions indicated in Fig. 1, that is, both the valve 15 and the valve 19 are closed. As the engine is started, the suction will open the valve 19 to admit air to the carbureter, and this downward movement of the air valve will automatically raise the fuel valve 15 and admit the necessary fuel to the air passage. As the speed of the engine increases, the valve 19 will be opened to a still greater extent, and the extent of movement of the air valve will accurately govern the extent of movement of the fuel valve. The speed of the engine may be governed by a suitable throttle valve 32 in the branch 10 of the casing. Opposite the air valve 19, the branch 11 has a wall 33 normally stationary, but capable of moving downwardly to form an outlet in case of back fire. As shown, this end wall 33, which constitutes the emergency outlet valve, is guided by a plurality of pins 34, and is held in place by coil springs 35 mounted on these pins. These springs are stronger than the spring 21, so that the outlet valve 33 is normally held closed, but in case of back fire, the pressure within the carbureter will be sufficient to force the wall 33 downwardly and allow the high pressure gases to escape. At the same time, the needle valve 15 will be held against its seat, so that the pressure cannot be communicated back through to the fuel supply tank.

Various changes may be made in the construction and operation of the specific carbureter illustrated, without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A carbureter having a casing provided

with an air inlet port and an emergency outlet port, disposed opposite to each other, a valve closing the air inlet port, a valve closing the emergency outlet port and separate springs for holding said valves in their closed positions, one of said valves constituting a guide for the valve stem and a stop for the spring of the other valve.

2. In a carbureter, a casing having a fuel inlet port, an air inlet port, and an emergency port opposite the air inlet port, valves for closing said fuel inlet port and emergency port, spring means for maintaining said valves normally in closed position, a valve for closing said air inlet port, a spring mounted on the stem of said valve and bearing at one end on the emergency valve and at the other end on said stem to normally hold the air inlet valve in closed position, connections between the air inlet valve and the fuel feed valve whereby suction pressure from the engine will simultaneously open said air inlet valve and said feed valve, and pressure from the engine will close said valves and open the said emergency valve.

3. In a carbureter substantially L-shaped in cross section, one arm of said L constituting an inlet to the engine, a feed valve positioned in line with said inlet, spring means maintaining said valve in closed position, an air inlet port in the other of said arms, an emergency valve in said other arm, opposite the air inlet port, a valve normally closing said air inlet port, the stem of said valve carried by said emergency valve, a coil spring bearing at one end on said emergency valve and acting on said stem of the air inlet valve to maintain said air inlet valve in normally closed position, a collar mounted on said stem, and a lever fulcrumed intermediate its ends, having one end engaging said feed valve and its opposite end engaging said collar, whereby suction pressure from the engine will simultaneously open said air inlet valve and said feed valve, and pressure from the engine will close said valves and open said emergency valve.

4. In a carbureter substantially L-shaped in cross section, one arm of said L constituting an inlet to the engine, a liquid fuel nozzle, means for controlling the amount of fuel passing to said nozzle, a feed valve extending centrally and longitudinally of said inlet and controlling the discharge from said nozzle, spring means maintaining said valve in closed position, an air inlet port in the other of said arms, an emergency valve in said other arm disposed opposite the air inlet port, a valve normally closing said air inlet port, the stem of said valve having guided movement in said emergency valve, spring means surrounding said valve stem and bearing on said emergency valve, the said spring means acting on said stem

of the air inlet valve to maintain said air inlet valve in normally closed position, a collar mounted on said stem, a lever fulcrumed intermediate its ends, having one end engaging said feed valve and its opposite end engaging said collar, whereby suction pressure from the engine will simultaneously open said air inlet valve and said feed valve, and pressure from the engine will close said valves and open said emergency valve, and springs maintaining said

emergency valve in position, said springs being stronger than the springs bearing on the emergency valve and maintaining said air inlet valve in position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PERCY FRANKLIN COLE.

Witnesses:

WM. HENRY BLOOMER,
EDWARD THATCHER.