

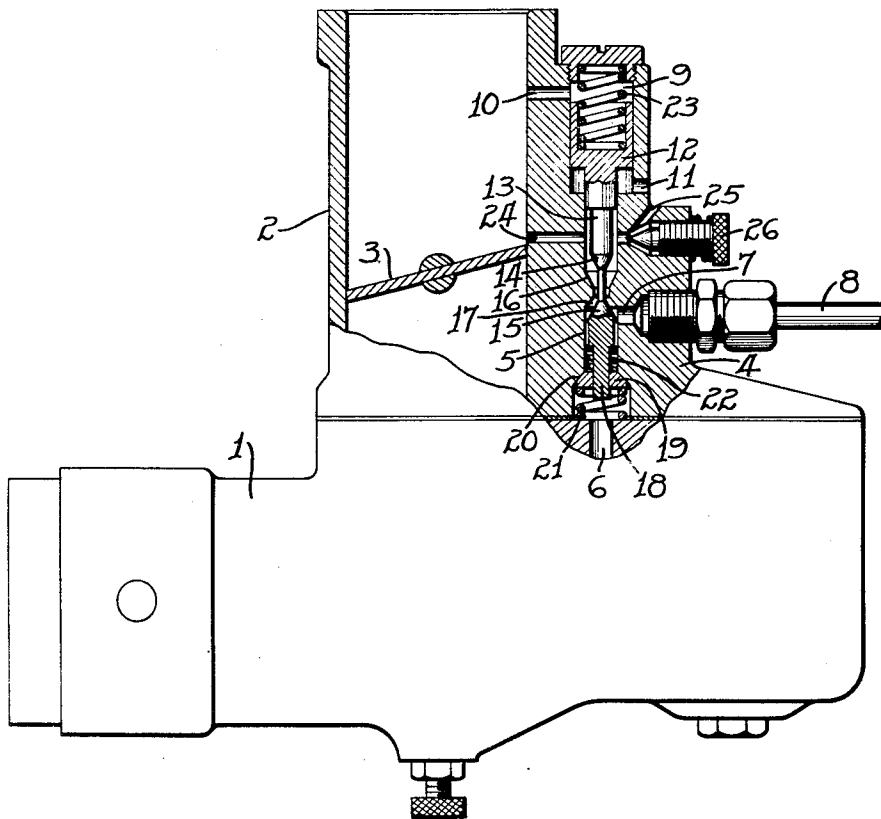
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CARBURETOR ATTACHMENT

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CARBURETOR ATTACHMENT

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12 Claims. (Cl. 261—41)

This invention relates to a carburetor attachment designed primarily for use in conjunction with a carburetor of the self-lifting type, which draws the fuel directly from the gasoline supply tank.

In the operation of self-lifting carburetors as heretofore constructed, the motor, when idling, draws its fuel supply from the carburetor bowl, but there is not enough suction developed at such times below the throttle valve to refill the bowl from the tank.

The object of the present invention, therefore, is to improve the performance of the motor when it is idling or when it is being used as a brake. With this end in view, the invention in its preferred form includes means for supplying fuel directly to the idling jet, independently of the carburetor bowl, when the motor is idling, and means to completely shut off the supply of fuel when the motor acts as a brake.

The specific construction of the invention and the advantages thereof will be more particularly explained in connection with the accompanying drawing, which is a sectional view of the attachment associated with the throttle, carburetor and fuel supply pipe of an internal combustion motor.

As illustrated in the drawing, the carburetor 1 is secured to the lower end of a fuel intake passageway 2, within which is a throttle valve 3. The carburetor, as herein referred to, includes the float chamber and a nozzle discharging into the mixing chamber or intake passageway, but does not include the idling passageway. The passageway 2 is formed at one side with a valve housing 4 having a bore 5 which is in vertical alignment with the inlet 6 to the float bowl of the carburetor. The bore 5 has a laterally disposed branch 7 to which is connected the upper end of a pipe 8 leading from the main gasoline tank of the car. When the motor is operating normally with the throttle 3 open, the fuel is drawn from the carburetor into the motor and the fuel supply to the carburetor bowl is drawn directly from the fuel tank through the pipe 8 and passages 7, 5 and 6.

The upper end of the housing 4 is formed with a cylindrical chamber 9 in alignment with the bore 5. The chamber 9 has a port 10 at its upper end leading into the fuel intake passageway and has an atmospheric port 11 at its lower end. A piston 12 is mounted for reciprocation within the cylindrical chamber 9 and has a stem 13 extending downwardly into the bore 5. The stem 13 has two opposed tapered surfaces 14 and 15 constituting a double-headed valve which is adapted

to selectively engage opposed valve seats 16 and 17 formed in the bore 5. The stem 13 also has a reduced lower end portion 18 on which a valve 19 is slidably mounted in position to cooperate with a valve seat 20. A spring 21 underneath the valve 19 tends to hold the latter upon its seat 20. A lighter spring 22 tends to hold the valve head 15 upon its seat 17, and a spring 23 acting upon the piston 12 tends to move the valve head 15 away from its seat 17, at the same time moving the valve head 14 onto its seat 16.

An idling jet 24 leads from the bore 5 into the fuel intake passageway 2 just above the throttle valve 3 to supply a limited amount of fuel to the motor when the throttle valve is closed for idling. Air for the fuel mixture supplied through the idling jet 24 is admitted through a port 25 and the amount of such air may be varied by an adjustment of the screw 26.

In the operation of the invention, when the motor is running normally with the throttle partly or fully open, the fuel is supplied to the motor from the carburetor. Under such conditions there is sufficient suction below the throttle valve to open the valve 19 against the resistance of the spring 21, and also to close the valve head 14 against its seat 16. Fuel will then be drawn directly from the gasoline tank through the pipe 8 and bore 5 into the carburetor bowl. When the throttle valve 3 is closed for idling, however, there is no longer any suction below the throttle valve and the valve 19 is closed by the spring 21. This compresses the spring 22 and at the same time the motor develops a partial vacuum above the throttle valve. This exerts suction upon the piston 12 through the port 10, while the underside of the piston is subjected to atmospheric pressure through the port 11. As long as the motor is idling, however, the suction will not be sufficient to close the valve head 15 against its seat 17, but the suction through the jet 24 will be sufficient to draw fuel directly from the tank into the fuel intake passage, at the same time drawing sufficient air from the port 25 for the proper fuel mixture. If the car is travelling fast enough so that the motor acts as a brake, such overrunning will create sufficient suction through the port 10 to raise the piston 12, overcoming the pressure of the spring 23 so that the valve head 15 will completely close and the supply of fuel will be entirely shut off.

From the foregoing description, it will be seen that I have provided a construction whereby a self-lifting carburetor may be used advantageously under all conditions of operation. When

operating with the throttle open, there will at all times be a normal supply of fuel to the carburetor bowl. When the throttle is closed, the valve 19 is also closed and the fuel in the carburetor bowl will remain intact, while the fuel for idling is supplied directly through the pipe 8 and the idling jet 24 to the motor. When the motor is being driven by the car, the valve head 15 will be closed and no fuel will be wasted.

While I have shown and described in detail the preferred form of the invention, it will be understood that the same may be modified in various ways without departing from the scope of the appended claims.

What is claimed is:—

1. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway, of an idling jet located above the throttle valve when the latter is closed, and means for supplying fuel directly to said jet, independently of said carburetor, said means comprising a fuel passageway leading to the carburetor and to said jet and valve means for effecting communication between said fuel passageway and said jet when the motor is idling with the throttle substantially closed and simultaneously cutting off communication between said fuel passageway and said carburetor.

2. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway and a carburetor connected to said passageway, of an idling jet located above the throttle valve when the latter is closed, means for supplying fuel directly to said jet, independently of said carburetor, said means comprising a fuel passageway leading to the carburetor and to said jet and valve means for effecting communication between said fuel passageway and said jet when the motor is idling with the throttle substantially closed and simultaneously cutting off communication between said fuel passageway and said carburetor, and means for cutting off the fuel supply entirely, whenever the motor is running faster than idling speed, with the throttle closed.

3. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway, of a fuel supply line, and coaxial valve means controlled by suction from the motor to connect said supply line with the carburetor when the motor is running with the throttle open and to connect it with the intake passageway, independently of the carburetor, whenever the motor is idling with the throttle substantially closed.

4. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway, of a fuel supply line, means controlled by suction from the motor to connect said supply line with the carburetor when the motor is running with the throttle open and to connect it with the intake passage, independently of the carburetor, when the motor is idling with the throttle substantially closed, and additional means to cut off the fuel supply completely whenever the motor is running faster than idling speed, with the throttle closed.

5. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway and adapted to lift its supply of fuel by suction, when the motor is

running normally with the throttle open, of means to supply fuel to the intake passageway independently of said carburetor, said means comprising a fuel passageway leading to the carburetor and to said jet and automatic valve means for effecting communication between said fuel passageway and said jet when the motor is idling with the throttle substantially closed and simultaneously cutting off communication between said fuel passageway and said carburetor.

6. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway and adapted to lift its supply of fuel by suction, when the motor is running normally with the throttle open, of means to supply fuel to the intake passageway independently of said carburetor, said means comprising a fuel passageway leading to the carburetor and to said jet and suction operated valve means for effecting communication between said fuel passageway and said jet when the motor is idling with the throttle substantially closed and simultaneously cutting off communication between said fuel passageway and said carburetor, and means to cut off the fuel supply completely from the intake passage, whenever the motor is running faster than idling speed, with the throttle closed.

7. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a fuel supply line, of means to connect said supply line to the intake passageway below the throttle valve only when the latter is opened, means to connect said supply line to the intake passageway above the throttle valve only when the motor is idling with the throttle substantially closed, and means for cutting off all fuel supply to the intake passage, whenever the motor is running faster than idling speed with the throttle closed.

8. In combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a fuel supply line having one branch leading to the intake passageway below the throttle valve and another branch with an idling jet leading to the intake passageway above the closed position of the throttle valve, and coaxial valve means for selectively closing communication through the respective branches.

9. In combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a fuel supply line having one branch leading to the intake passageway below the throttle valve and another branch with an idling jet leading to the intake passageway above the closed position of the throttle valve, and coaxial valve means selectively controlled by suction from the intake passageway for closing communication through either one or both of said branches.

10. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway, of an idling jet located above the throttle valve when the latter is closed, a fuel supply line having one branch leading to the carburetor and another branch leading to said jet, a valve in the branch leading to the carburetor, a spring tending to close said valve but yieldable to suction through the carburetor when the motor is operating normally with the throttle open, a double-headed reciprocable valve movable in either direction to close com-

- munication through the branch leading to said jet, a piston connected with the double-headed valve, a spring acting on the piston to move it in one direction to close the last mentioned
- 5 branch when the first mentioned valve is open, a port between the piston and the intake passageway above said jet, the spring acting on the piston being of such strength as to hold the double-headed valve in intermediate open position when
- 10 the motor is idling with the throttle closed and yieldable to permit the suction on the piston to close the double-headed valve against the resistance of the spring when the motor is running faster than idling speed, with the throttle closed.
- 15 11. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway, of an idling jet located above the throttle valve when the
- 20 latter is closed, means for supplying fuel from the carburetor to the passageway below the throttle valve when the latter is open, means for supplying fuel directly to said jet, independently of the carburetor, when the motor is idling with the throttle substantially closed, and coaxial valve means selectively controlling the respective supply means. 80
12. The combination with the fuel intake passageway of an internal combustion motor, a throttle valve in said passageway, and a carburetor connected to said passageway and adapted 85 to lift its supply of fuel by suction when the motor is running normally with the throttle open, of means for supplying fuel from the carburetor to the passageway below the throttle valve when the latter is open, means to supply fuel to the 90 intake passageway independently of the carburetor when the motor is idling with the throttle substantially closed, and coaxial valve means selectively operable by suction from the intake passageway to control the respective supply means. 95
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