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CARBURETOR

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FIG. 1.

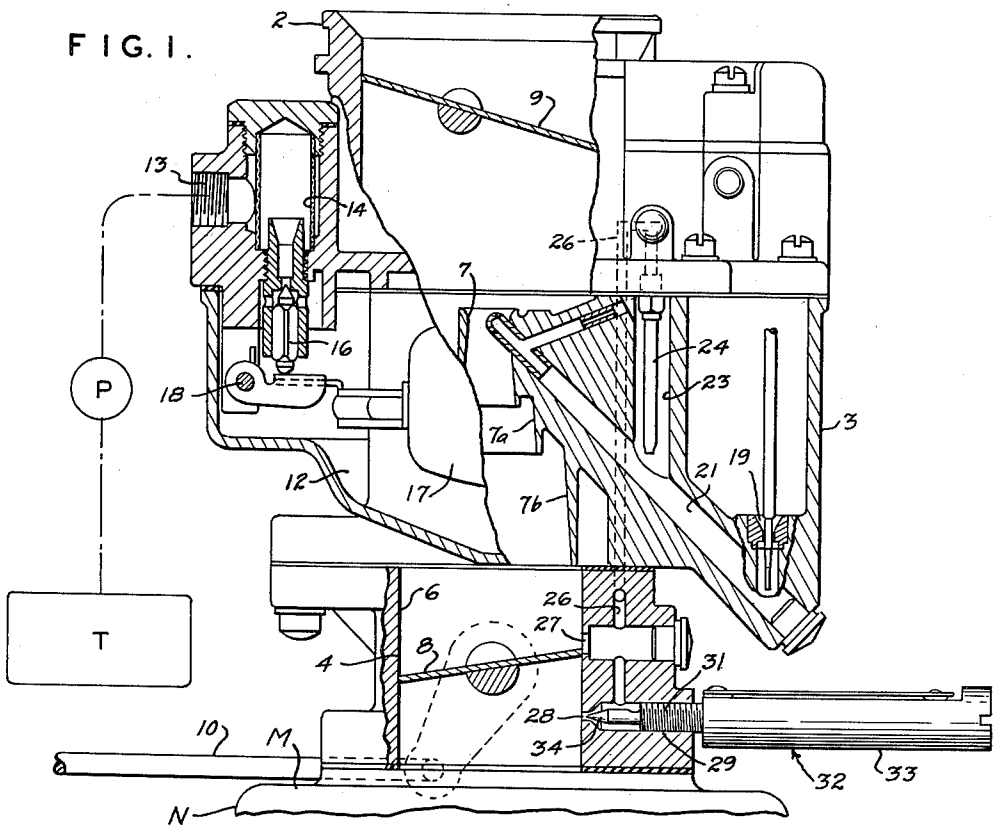
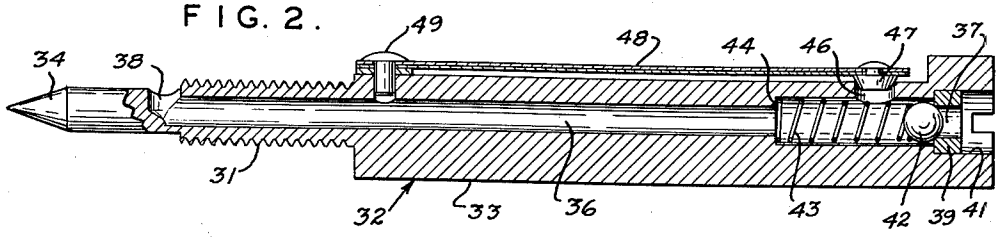



FIG. 2.




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# CARBURETOR

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This invention relates to carburetors for internal combustion engines, and more particularly to means for controlling the fuel mixture supplied to the engine by the idle fuel system.

In the operation of conventional carburetors, the idle fuel system is adapted to supply a small quantity of fuel and air to the engine when the throttle valve is in closed or nearly closed position. During rapid deceleeration of a vehicle with the throttle valve closed, an excess quantity of fuel is drawn from the idle fuel system into the engine and is exhausted to atmosphere, thereby contaminating the atmosphere and wasting fuel. During idle operation of an engine at high underhood temperatures, it is desirable to lean out the idle fuel mixture to increase the speed of the engine to prevent stalling.

It is, therefore, an object of the invention to provide a carburetor with means for leaning out the fuel mixture supplied to an engine by the idle fuel system during deceleration and hot idle operation of an engine.

Another object of the invention resides in the provision of means adapted to be applied to conventional carburetors for controlling the fuel mixture supplied to an engine by the idle fuel system.

A further object of the invention resides in the provision of an idle adjustment screw provided with means for controlling the ratio of fuel to air supplied to an engine by the idle fuel system.

Another object of the invention resides in the provision of an idle adjustment screw provided with an air inlet passage controlled by an inlet check valve operable responsive to suction posterior of the throttle valve, whereby a leaner fuel mixture is supplied to the engine during deceleration.

Another object of the invention resides in the provision of an idle adjustment screw provided with a thermostat operable responsive to an increase in ambient temperature to open a valve in the air inlet passage in the adjustment screw to provide the engine with a leaner fuel mixture under hot idle conditions.

The invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawing, forming part thereof, wherein:

FIG. 1 is a vertical section, partly in side elevation, showing a carburetor provided with an idle fuel system control means embodying features of the invention.

FIG. 2 is an enlarged longitudinal section illustrating the control means for the idle fuel system.

Referring now to the drawing for a better understanding of the invention, a downdraft carburetor is shown as comprising an air horn section 2, a main body section 3, and an outlet section 4, said sections being secured together and forming a mixture conduit 6 having a stack of venturis 7, 7*a* and 7*b* in the main body section. The carburetor is mounted on the intake manifold M of a conventional internal combustion engine N adapted for use in driving a vehicle.

A conventional choke valve control mechanism, operable responsive to intake manifold suction and temperature, is adapted to be provided to control the operation of a choke valve 9 provided in the air inlet end of the mixture conduit 6. A throttle valve 8 is disposed in the



outlet end of the mixture conduit and is connected by means of a suitable linkage 10 to an accelerator pedal for control by the operator.

The main body section 3 is provided with a fuel bowl 12 having a fuel inlet 13 provided with a screen filter 14 and a fuel inlet valve 16. A float 17 is pivotally mounted at 18 within the fuel bowl to actuate the valve to maintain a substantially constant fuel level within the bowl. Fuel is supplied to the bowl from a fuel tank T by means of a conventional engine operated fuel pump P interposed in a fuel conduit 25 leading to the fuel inlet 13.

A fuel metering orifice 19 leads from the fuel bowl to an upwardly inclined main fuel passage 21 having a main fuel nozzle 22 discharging into the primary venturi 7. An idling fuel system is shown as comprising a fuel well 23 leading upwardly from the main passage 21, the well having a metering tube 24 therein communicating with an idle passage 26 leading to idle ports 27 and 28 in the outlet section 4. The outlet section 4 is provided with an internally threaded passage 29 coaxial with the idle port 28 to receive the threaded portion 31 of an idle fuel control device 32.

The idle fuel control device 32 is shown as comprising an elongated body 33 formed at one end with a conical tip 34 for registry with the idle port 28 to control the flow of fuel therethrough during idle operation of an engine under normal conditions. The body 33 is provided with a longitudinal passage 36 having a coaxial air inlet port 37 and an air outlet port 38 leading into the passage 29.

The inlet port 37 is formed in a seat ring 39 press-fitted within a bore 41 formed in the end of the body 33. The seat ring 39 is formed with an annular valve seat for engagement by a spherical valve member 42 which is normally held against the seat by a compression spring 43 seated against a shoulder 44.

A hot idle air intake port 46 is formed in the body 33 adjacent the outer end thereof to bleed air into the passage 36 under control of a valve element 47 provided on one end of a bimetal thermostat 48 secured to the body by means of a screw or rivet 49, the valve element 47 being seated in the port during normal ambient temperatures.

In operation, the control device 32 may be threaded toward or away from the idle port 28 to adjust the flow of fuel from the idle fuel system to an engine to control the idling speed of the engine.

During hot weather and high underhood temperatures, it is desirable to lean out the idle fuel mixture to an engine to prevent stalling. This result is accomplished by means of the thermostat 48 which acts to move the valve element 47 away from the port 46 to permit a flow of air through the passage 36 to the idle port 28.

When the throttle valve 8 is closed to decelerate a vehicle, it is desirable to bleed air into the idle system to reduce the quantity of fuel delivered to the engine. By providing a spring biased check valve 42 in the air inlet port 37 to open at high suction posterior to the throttle valve, additional air is bled through the passage 36 and port 28 to lean out the fuel mixture supplied to the engine.

Certain structures have been shown and described herein which will fulfill all the objects of the present invention, but it is contemplated that other modifications will be obvious to those skilled in the art which come within the scope of the invention as defined by the appended claims.

I claim:

1. A carburetor for an internal combustion engine comprising a mixture conduit having an outlet portion

adapted to be mounted on an engine intake manifold, a throttle valve in said conduit outlet portion, means forming an idle fuel system in said carburetor and including an idle port opening into said mixture conduit posterior to said throttle valve to discharge fuel into said conduit, an internally threaded passage in said conduit outlet portion connecting said idle port to the exterior of said carburetor, a combined hot idle compensator and degasser device comprising an elongated body having one inner end in threaded engagement in said passage and another portion thereof extending outside said mixture conduit outlet portion, a conical tip on said inner end of said body in registry with said idle port, an air passage in said body extending axially therethrough and having first and second air inlet ports in said other body portion opening outside said carburetor and an air outlet port connected to said threaded passage to supply air to said internally threaded passage, a check valve means in said axially extending air passage normally closing said first air inlet port and responsive to suction posterior of said throttle valve in said air passage to lean out the idle fuel mixture supplied to the engine during deceleration, a valve normally closing said second inlet port to control air flow through said second air inlet port, and means outside said carburetor and fixed to the exposed surface of said other body portion responsive to an increase in ambient temperature to open said air control valve to lean out the idle fuel mixture supplied to the engine.



2. The invention of claim 1 wherein said temperature responsive means includes a bimetallic spring strip having one end fixed to said exposed body portion surface and the other end thereof fixed to said air control valve.

3. The invention of claim 2, wherein said air control valve includes a frusto-conical valve element mounted on said bimetallic strip in registry with said second inlet port.

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