Jan. 2, 1940. F. C. MOCK 2,185,265

CARBURETOR

Filed Oct. 13, 1937

FIG. 1

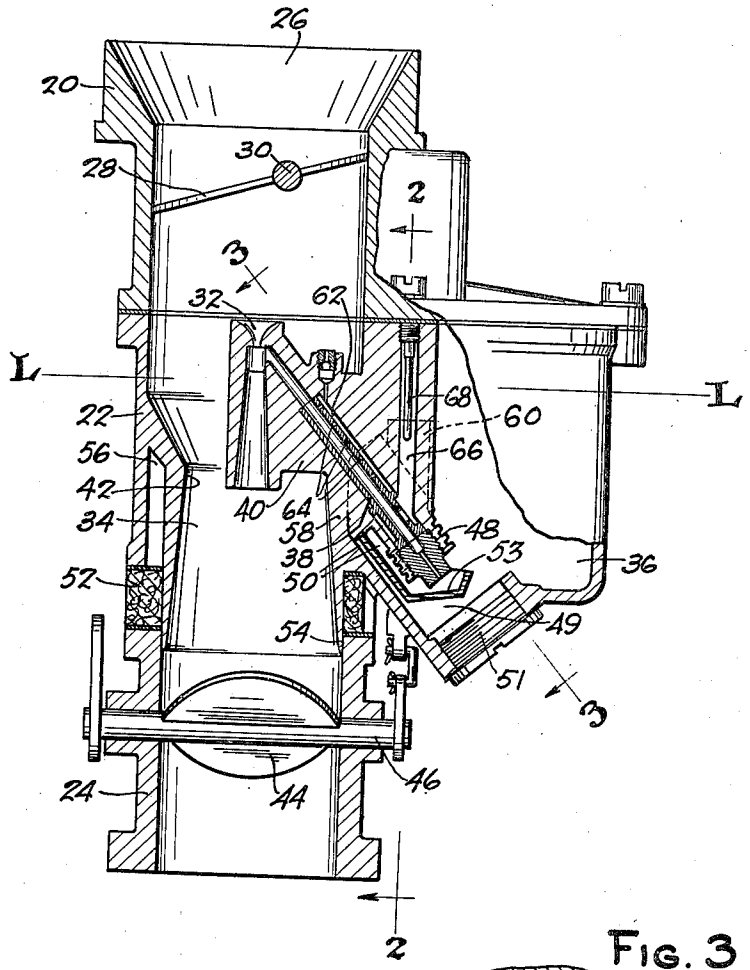
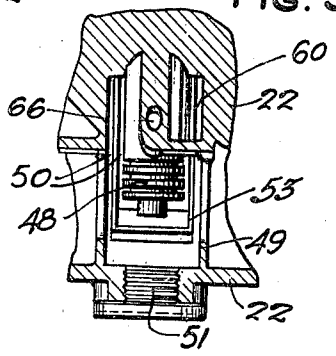


FIG. 3



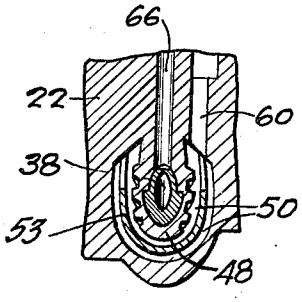


FIG. 2

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CARBURETOR

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4 Claims. (Cl. 261—72)

This invention relates to carburetors and more particularly to means for preventing fuel from boiling out of the main nozzle of the carburetor. This application is a continuation in part of my copending application Serial No. 47,930, filed November 2, 1935.

The phenomenon commonly known as "percolation" occurs when the fuel within the main nozzle vaporizes under the influence of heat from the engine, particularly when the engine is stopped after having been operated, the vapor escaping from the nozzle outlet in intermittent bubbles which carry with them liquid fuel which, in a downdraft carburetor, passes into the intake manifold and engine cylinders, where it hinders the starting and operation of the engine.

A major portion of the heat which causes such percolation flows by conduction from the intake manifold through the throttle body section of the carburetor to the metal adjacent the main nozzle.

An object of the present invention is to impede the flow of heat from the intake manifold to the main nozzle by providing a region of low heat conductivity through which the heat must pass in order to reach the nozzle.

A further object of the invention is to provide means for transferring to the fuel in the carburetor fuel reservoir the heat which does reach the vicinity of the main nozzle.

A further object of the invention is to cool the main nozzle by surrounding it and its associated elements with a body of fuel which is in free communication with the fuel contained in the float chamber of the carburetor.

Further objects and advantages of the invention will be apparent from the following description, considered in connection with the accompanying drawing, which is submitted for purposes of illustration only and not intended to define the scope of the invention, reference being had for that purpose to the appended claims.

Figure 1 is a vertical section through a carburetor embodying the invention;

Figure 2 is a fragmentary sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a similar view taken on line 3—3 of Figure 1.

Referring more particularly to Figure 1, there is shown a carburetor having an airhorn section 20, a main body section 22, and a throttle body section 24. The airhorn section 20 forms an air inlet passage 26 to admit air controlled by an unbalanced choke valve 28 mounted on a choke shaft 30, rotatably mounted in the airhorn section 20. The main body section 22 is provided with a primary venturi 32, projected into the mid-portion of an induction passage 34 formed by the three sections of the carburetor mentioned above. A fuel reservoir 36 is adapted to maintain liquid fuel therein at the level indicated at L—L in Figure 1, and to supply the same to the primary venturi 32 by means of a fuel discharge nozzle 38, communicating with the fuel reservoir 36 and projecting through a fin 40 supporting the primary venturi 32. The primary venturi 32 thus operates to supply a rich mixture of fuel and air into the induction passage 34 immediately posterior to the restricted section of a secondary venturi 42 formed integral with the fuel reservoir section 22. The rich mixture supplied by the primary venturi is diluted by a suitable quantity of air admitted through the secondary venturi 42 to form a combustible mixture for the operation of the engine to which the carburetor is attached. The combustible mixture thus formed is passed to the engine by way of the throttle body section 24 having a throttle valve 44 fixed to a throttle shaft 46 rotatably mounted in the walls of the throttle body section 24.

The main fuel nozzle 38 is positioned in an integral boss 48 which extends into a chamber 49 forming the lower section of the fuel reservoir 36 and closed by a threaded plug 51. The boss 48 is of generally cylindrical shape and is practically surrounded by a cored-out recess 50 which receives fuel from the fuel reservoir 36 which absorbs and dissipates heat from the boss.

Fins may be provided on boss 48, as shown, if it is desirable to increase the heat dissipating capacity of the boss. The fins may be cast integral with the boss or, to facilitate die-casting the main body section 22, may be provided on a separate piece adapted to be pressed or threaded into the boss. A baffle 51 projects downwardly in the recess 50 and extends longitudinally of the boss 48 to a point beyond the entrance to the nozzle 38. The baffle is arcuately shaped and wholly spaced both from the boss 48 and from the bottom of the reservoir 36 to prevent vapor generated in the bottom of recess 50 and reservoir 36 from being drawn into the fuel nozzle 38.

In order to impede the flow of heat upwardly from the intake manifold, a thick gasket 52 of heat insulating material is interposed between the throttle body section 24 and the main body section 22, and the metal-to-metal contact between the two sections is minimized by limiting the overlap between venturi 42 and the throttle body section to a narrow annulus, as indicated at 54. The main body section is also cored out

to form an annular recess 56 which forms a dead-air heat-insulating space between the venturi 42 and the remainder of the main body section. Heat can travel upwardly to the main nozzle only by passing through a relatively thin flange or neck 58 lying between recess 50 and the induction passage 34, and what heat reaches the boss 48 surrounding the main nozzle is transferred to the fuel in the chamber 49, usually before the temperature reaches the boiling point of the fuel.

If boiling occurs in the fuel in chamber 50, the vapors escape upwardly through grooves 60 which extend vertically at each side of the boss 48 and have free communication with the float chamber 36.

The fuel system of the carburetor comprises a fuel well 62 communicating with the interior of the main nozzle through a series of air-bleed holes 64. An idling fuel passage 66 extends vertically from the lower portion of the nozzle 38 through an idling tube 68 and thence through passages not shown to a nozzle adjacent the throttle. The arrangement shown is such that even if, under extreme circumstances, a degree of boiling occurs in the main nozzle the supply of idling fuel, which is drawn from the bottom of the nozzle, is not interrupted.

While the invention has been described with particular reference to one embodiment, it is to be understood that the scope of the invention is not limited to the particular features illustrated and described, nor otherwise than by the terms of the following claims.

I claim:

1. In a downdraft carburetor, a body section forming an induction passage and having a venturi and a fuel reservoir formed integral therewith, a boss projecting from said body section into said fuel reservoir to a point adjacent the bottom thereof but separated from the walls of the fuel reservoir by an annular fuel-receiving space, an inclined passage in said boss terminating at said venturi, a fuel nozzle in said passage, and a baffle extending longitudinally beneath the boss and terminating beyond the end thereof to deflect vapor bubbles away from the entrance to said passage.

2. In a downdraft carburetor, a main body section comprising a fuel reservoir, a thin downwardly extending sleeve of venturi shape, and a downwardly extending flange displaced outwardly from said sleeve to form a dead air space, a lower body section receiving the lower edge of said sleeve in telescoping relation, said body sections forming an induction passage, a thick heat-insulating gasket between said flange and said lower body section, an integral boss formed on the outer surface of said sleeve and extending into the fuel reservoir, a plurality of heat dissipating flanges carried by said boss, a fuel nozzle in said boss connecting the fuel reservoir and the induction passage, and a baffle extending longitudinally beneath the boss and terminating beyond the end thereof, to deflect vapor bubbles away from the entrance to said passage.

3. In a carburetor having an induction passage, a primary venturi, a fuel reservoir, a fuel nozzle adapted to discharge into the primary venturi and communicating with the fuel reservoir by means of a boss projecting into the fuel reservoir, said boss having a plurality of heat dissipating fins thereon, and a baffle extending longitudinally beneath the boss and terminating beyond the end thereof, to deflect vapor bubbles away from the entrance to said passage.

4. In a carburetor, a fuel chamber, a body member forming an induction passage, an integral boss formed on said body member and projecting for a substantial distance to a point adjacent the bottom of the chamber, said boss being spaced from the walls of the fuel chamber and provided with a plurality of heat dissipating fins, an inclined fuel passage in said boss terminating in said induction passage, and a baffle extending longitudinally beneath the boss and terminating beyond the end thereof, to deflect vapor bubbles away from the entrance to said passage.

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