Dec. 9, 1952 O. HENNING 2,621,030

CARBURETOR NOZZLE SYSTEM

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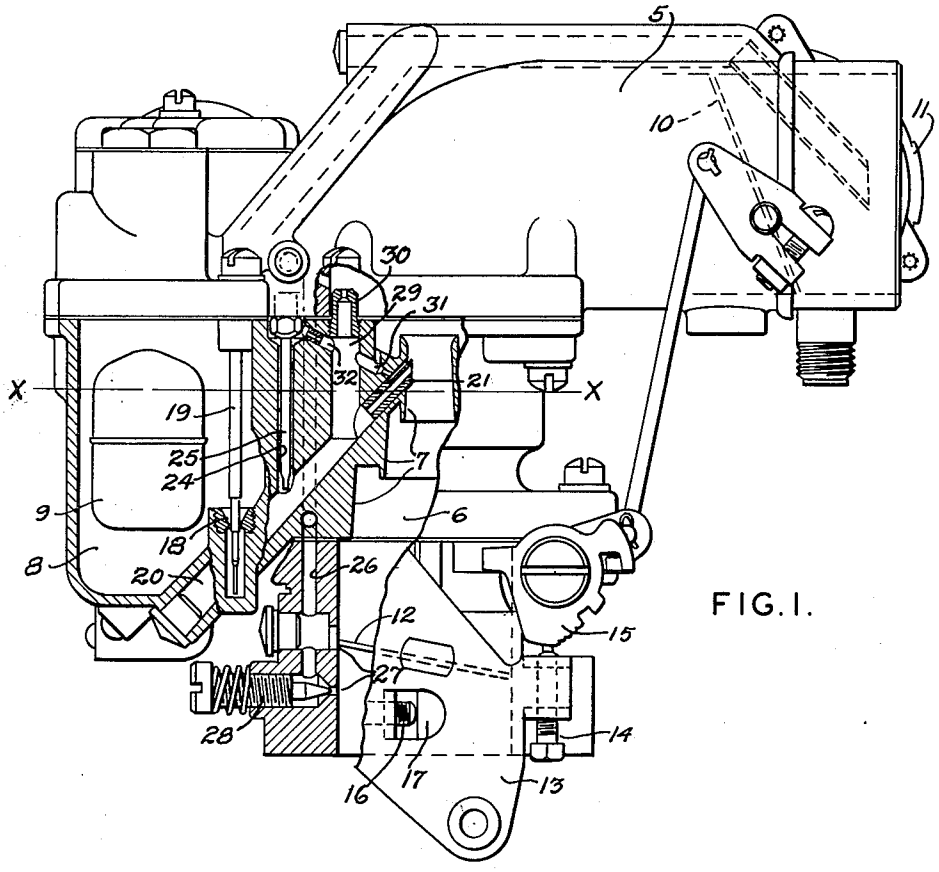


FIG. 1.

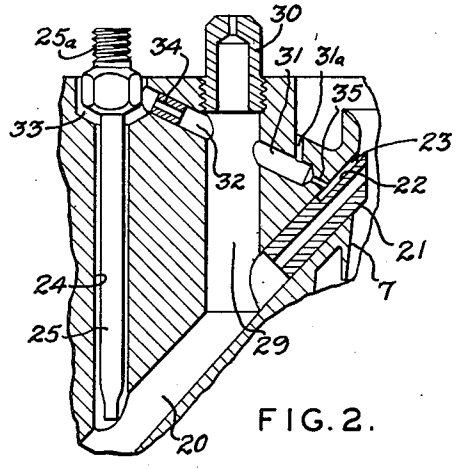


FIG. 2.

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CARBURETOR NOZZLE SYSTEM

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3 Claims. (Cl. 261—41)

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This invention relates to carburetors for internal combustion engines and consists particularly in novel means for releasing vapors from the fuel nozzle system.

A Patent No. 2,241,655 in the name of Harold A. Carlson discloses a vapor release or "anti-percolator" passage which extends vertically upwardly from the lower part of an upwardly, inclined main fuel nozzle to a point above the fuel level and then extends transversely and opens into the fuel nozzle. It has been found that in some installations the connection of the so-called anti-percolator passage to the fuel nozzle has produced calibrating difficulties. Furthermore, no effort has been made to vent the idling passage and percolation has occurred therein which has resulted in draining of fuel out through the idling ports after the engine stops.

An object of the present invention is to provide an anti-percolator of the valveless type for the main fuel nozzle which, however, though subject to similar suction conditions as the main nozzle, does not open thereinto.

Another object is to provide means for venting the idling fuel passage.

These objects and other more detailed objects hereafter appearing are attained by the structure illustrated in the accompanying drawing in which

Fig. 1 is a side view and section illustrating an automotive carburetor embodying the invention.

Fig. 2 is an enlarged sectional detail of the structure in Fig. 1.

The carburetor shown is the downdraft type including a side entrance air inlet horn 5, a mixture conduit 6 including triple Venturi structure 7, and a constant level fuel reservoir 8 enclosing the usual float 9. The entry of air to the air horn is controlled by a choker valve 10 controlled, in this instance, by means of an automatic choke control shown in part at 11. The discharge of mixture to the lower end of the mixture conduit is controlled by a butterfly throttle valve 12 having a manual control lever 13 rigidly secured thereto. The lever carries an adjusting screw 14 which contacts fast idle cam 15 to limit the idling speed. Normal idling speed is controlled by adjusting screw 16 and abutment 17.

Fuel is supplied from the constant level chamber through a main metering orifice element 18 adjusted by a metering rod 19 which is operated either directly from the throttle valve or by suction or by a combination of both, as is well known. The metering orifice element communicates with a main fuel passage 20 which extends upwardly

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at an acute angle and opens into smallest Venturi tube 7. A nozzle element 21 is seated in the upper extremity of passage 20 and has a flattened upper end portion 22 forming a slot 23 for a purpose to be described hereafter. An idling passage 24 projects vertically from passage 20 and receives an idle metering tube 25 carried from the air horn structure by a threaded portion 25a through which fuel is transmitted by suction to idling passage 26 which terminates in ports 27 adjacent and posterior to the throttle valve 12 when closed. One of the idling ports is provided with the usual mixture adjusting screw 28.

Also projecting upwardly from main passage 20 adjacent the idling passage is a vapor release duct 29 having a calibrated air bleed element 30 screwed into the upper end thereof. Communicating with this duct above the normal fuel level X—X is a cross passage 31, having an air bleed 31a, which extends to slot 23 in the main nozzle passage. This passage also extends oppositely of duct 29, as at 32 and connects the duct with an enlargement 33 at the upper portion of idling passage 24. Cross passage portion 32 has a calibrated restriction 34 while portion 31 of the passage has a calibrated restriction 35. Thus, cross passage 31, 32 serves to vent the idling system through slot 23 and small Venturi tube 7 and duct 29, 31 vents the main fuel passage. The venting system, while exposed to substantially identical suction conditions as the outlet end of nozzle 21, actually communicates independently with small venturi 7 as an aid to proper proportioning of the fuel as metered by orifice element 18 and metering rod 19. Air bleed 30 aids in calibrating the fuel discharge.

The fuel and venting arrangement disclosed has worked out satisfactorily in practice. While duct 29 is vertically disposed, it may be somewhat inclined, provided it extends more sharply upwardly than main passage 20 so that bubbles will rise into the venting duct rather than through the main nozzle.

The invention may be modified in these and other respects as will occur to those skilled in the art, and the exclusive use of all modifications as come within the scope of the appended claims is contemplated.

I claim:

1. In a carburetor, a mixture conduit having a Venturi tube and a throttle valve therein, a constant level chamber adjacent said conduit, a main fuel supply passage extending upwardly at an angle between vertical and horizontal from the lower part of said chamber into said Venturi tube,

a duct extending upwardly from a portion of said main fuel passage within said conduit and having an opening into said conduit outside said Venturi tube and above the normal fuel level, an idling fuel passage extending upwardly from said main passage along said duct and thence to a discharge port posterior to said throttle valve when closed, and a venting cross connection between said idling passage and said duct above the normal fuel level, said duct being of ample cross section from its communication with said main fuel passage to the normal fuel level to permit escape of gas bubbles formed in said main passage and said duct opening serving to release gases in said main and idling passages when there is no flow therethrough and to bleed air into said passages during normal operation thereof.

2. A carburetor as described in claim 1 further including a rib connecting said Venturi tube and the mixture conduit wall, said duct and the upwardly extending portion of said idling passage being formed in said rib and said cross connection being extended to open into said mixture conduit.

3. A carburetor as described in claim 1 further including a nozzle in the outlet end of said main fuel passage and in which said cross connection is extended to and opens through an opening in the wall of said Venturi tube immediately adjacent said nozzle.

OTTO HENNING.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,929,266	Viel	Oct. 3, 1933
2,134,877	Jedrzykowski	Nov. 1, 1938
2,234,946	Bicknell	Mar. 18, 1941
2,241,655	Carlson	May 13, 1941
2,291,418	Storer	July 28, 1942