Dec. 31, 1957 R. R. ROSS 2,818,111

AUTOMATIC FUEL CONTROL

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Fig. 1.

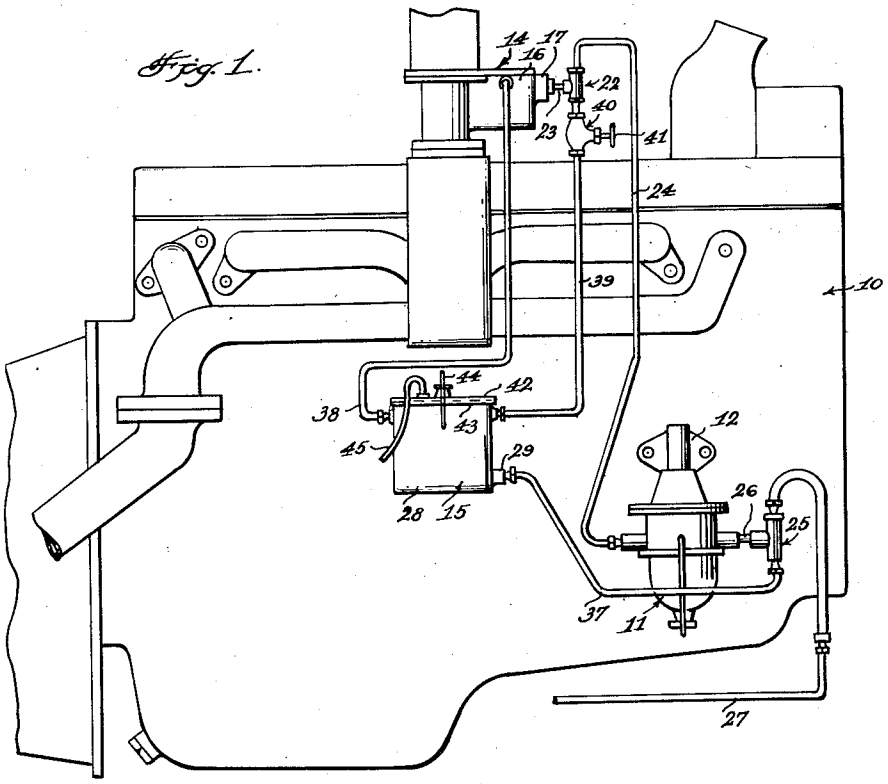
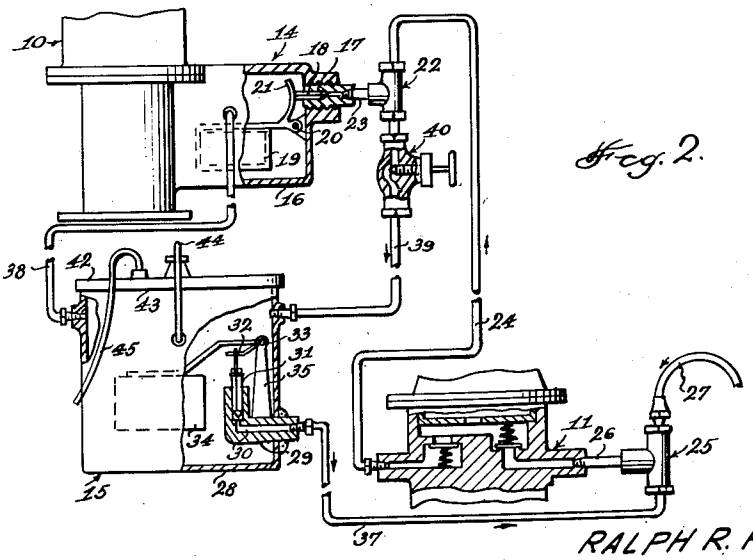


Fig. 2.



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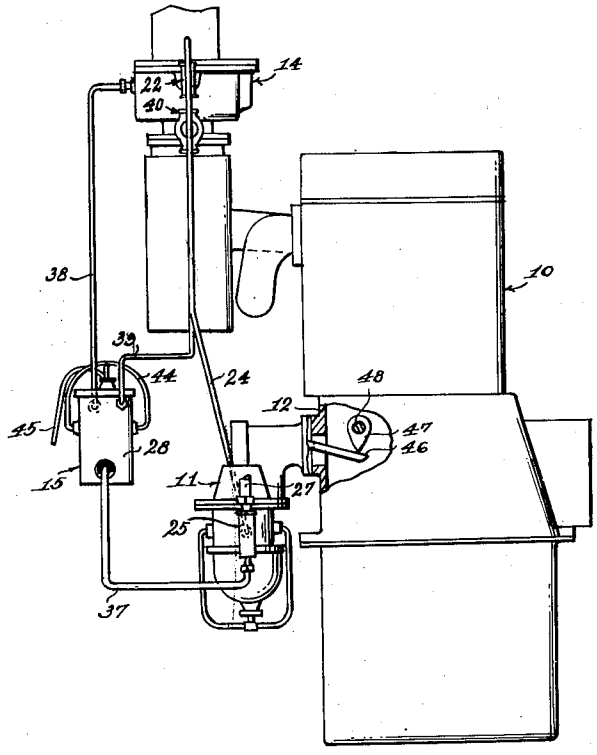


Fig. 3.

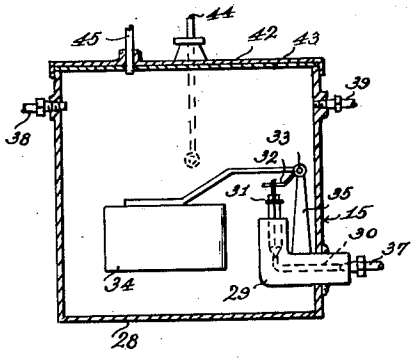


Fig. 4

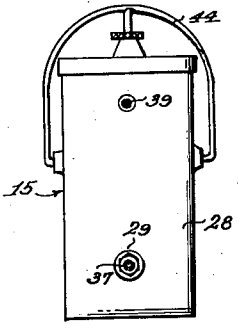


Fig. 5.

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United States Patent Office 2,818,111 Patented Dec. 31, 1957

2,818,111

AUTOMATIC FUEL CONTROL

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Application December 10, 1954, Serial No. 474,568

4 Claims. (Cl. 158—36.4)

This invention relates to an internal combustion engine, and more particularly to an automatic fuel control mechanism for an internal combustion engine.

The object of the invention is to provide an automatic fuel control for use in an internal combustion engine of a vehicle such as an automobile, whereby vapor locking and carburetor flooding will be prevented.

Another object of the invention is to provide an automatic fuel control assembly which takes air out of the main line that leads from the fuel pump to the carburetor and wherein vapor locking will be stopped and wherein carburetor flooding will be prevented.

A further object of the invention is to provide an automatic fuel control which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a side elevational view of the automatic fuel control attached to an internal combustion engine.

Figure 2 is a view similar to Figure 1, but showing parts broken away and in section.

Figure 3 is an end elevational view of the assembly of the present invention.

Figure 4 is a longitudinal sectional view taken through the fuel control unit.

Figure 5 is an end elevational view of the fuel control unit of Figure 4.

Referring in detail to the drawings, the numeral 10 designate a portion of a conventional internal combustion engine, such as an engine for a vehicle, and there is provided the usual fuel pump 11 and carburetor 14. The numeral 15 designates the fuel control unit of the present invention, and the pump 11 may be secured in place by means of a bracket 12.

The carburetor 14 includes a housing 16 and communicating with the interior of the housing 16 is a fuel inlet 17 which has a movable needle valve 18 arranged therein. A float 19 is pivotally mounted in the housing 16 by means of a pin 20, and the float 19 controls the needle valve 18 through the medium of a bracket 21.

Arranged contiguous to the carburetor 14 is a T-fitting which is indicated generally by the numeral 22, and the T-fitting 22 has a branch line 23 connected to the fuel inlet 17. A conduit 24 leads from the T-fitting 22 to the fuel pump 11, Figure 2.

There is further provided a second T-fitting which is indicated generally by the numeral 25, and the T-fitting 25 includes a branch line 26 which is connected to the inlet of the fuel pump 11. A conduit or line 27 serves to supply fuel such as gasoline from a suitable source of supply such as the gas tank to the T-fitting 25.

The fuel control unit 15 includes a hollow casing or housing 28, and secured within the housing 28 is an L-shaped bushing 29 which is provided with a longitudinally extending passageway 30 for the passage therethrough of

fuel. A needle valve 31 is movably mounted in the vertical portion of the bushing 29 for controlling the flow of fuel therethrough, and a bracket 32 is pivotally mounted in the housing for controlling up and down movement of the needle valve 31. The bracket 32 may be pivotally mounted on a support member 35 by means of a pin 33, and secured to the bracket 32 is an arm 36 which may be secured in any suitable manner to a float 34. Thus, as the float 34 moves up and down in the casing 28 in response to changing levels of fuel therein, the needle valve 31 will move up and down to thereby selectively open or close the passageway 30.

Extending from the bushing 29 to the fitting 25 is a conduit 37. A conduit 38 extends from the casing 28 to the housing 16 for a purpose to be later described. There is further provided a conduit 39 which extends from the casing 28 to the fitting 22, and the conduit 39 has a valve 40 interposed therein, there being a manually operable handle 41 for opening and closing the valve 40.

Detachably mounted on the top of the casing 28 is a lid or cover 42 which may have a gasket 43 therebelow whereby foreign matter or dirt will be prevented from entering the unit 15. The lid 42 may be maintained in place on the casing 28 by means of a clamp or bracket 44, and extending from the lid 42 is a vent pipe 45. The pump 11 is of conventional construction and may be actuated by means of a lever 46 which is engaged by the cam 47 mounted on the cam shaft 48, Figure 3.

From the foregoing it is apparent that there has been provided an automatic fuel control mechanism which will improve the efficiency of internal combustion engines such as engines for automobiles and the like. In use the needle valve 40 in the line 39 is adjusted so as to permit a small amount of gasoline to flow to the unit 15. The line 38 is connected to the housing 16 at a proper level whereby excess gasoline will flow from the carburetor 14 back to the unit 15. The line 45 serves as a vent, and the automatic control unit 15 receives gasoline at two inlets, namely, from the conduit 38 and from the conduit 39. The valve 31 stays closed until gasoline in the casing 28 reaches a predetermined level whereby the float 34 will open the valve 31 so that the fuel can pass through the line 37 to the fuel pump 31. The conduit 37 returns the fuel from the casing 28 to the fuel pump 11 and fuel passes from the pump 11 through the conduit 24 to the carburetor 14. With the present invention, the fuel control unit 15 will take air out of the main line 24 which leads from the fuel pump 11 to the carburetor 14, whereby vapor locking will be stopped. Also, any excess gasoline above the correct fuel level in the carburetor will pass out through the line 38 to thereby prevent flooding of the carburetor.

The unit can be attached to the fender skirt of the car, or to the cylinder head, or to the carburetor or to any other part desired, preferably flexible gasoline lines are used along with the metal tubing so that vibration will not break the line. The present invention will eliminate much of the trouble that occurs in vehicles especially in hot climates and makes the engines run smoother and keeps the engines from going dead at slow driving as in downtown traffic. Also, the engine will be prevented from going dead or cutting out at high speed in hot weather due to vapor locking, and also gas mileage will be increased. Thus, the present invention releases and takes out much of the air that the fuel pump is pumping along with the gasoline before it enters the carburetor whereby the carburetor can function the way it should. Since the air is removed, there is no build up of air pressure in the line from the outlet of the fuel pump to the carburetor and this stops vapor locking.

The unit 15 stops extreme vapor locking and prevents the carburetor from flooding and causing the engine to

die and also keeps the gas vapor from forming in the oil bath air cleaners which are mounted on carburetors. The line **37** and valve **31** maintain or provide a means whereby the unit **15** is emptied or discharged automatically. If desired a check valve can be arranged adjacent the fitting **25** in the line **37** for preventing flow of fuel in the wrong direction through the conduit **37**. Thus, this type of check valve can be used where the back end of the car might be much higher than the front end of the car as on a steep hill or a mountain since it would prevent flow of gasoline out of the gasoline tank back to the control unit **15**. The valve **40** is adjusted so that a very small amount of gasoline flows to the control unit **15**, and this gasoline would ordinarily have gone into the carburetor. The valve **40** also releases most of the air that the fuel pump pumps, and since the air will follow the path of least resistance, it will enter the unit **15**. Thus, the air will pass out of the feed line to prevent vapor lock.

I claim:

1. In combination, a carburetor including a housing having a fuel inlet therein, a float valve for controlling flow of fuel through said fuel inlet, a fuel control unit spaced from said carburetor, a fuel pump spaced from said fuel control unit, a first T-fitting adapted to be connected to a source of supply of fuel and said T-fitting having a branch line connected to said pump, a second T-fitting having a branch line connected to the fuel inlet of said carburetor, a conduit connecting said first and second fittings together, a conduit extending from said second fitting to said fuel control unit and having a manually operable valve therein, said fuel control unit including a casing, a cover detachably mounted on top of said casing, a conduit extending from said casing to said carburetor, said fuel control unit further including a bushing having a passageway therein, a needle valve for controlling flow of fluid through said passageway, a float for controlling said needle valve, and a conduit interconnecting said passageway to said first fitting.

2. The structure as defined in claim 1, and further including a vent pipe extending from said fuel control unit.

3. The structure as defined in claim 1, and further including means for preventing foreign matter from entering the fuel control unit, said means comprising a gasket.

4. In combination, a carburetor comprising a housing provided with a fuel inlet therein, a float valve for controlling flow of fuel through said fuel inlet, a fuel control unit spaced from said carburetor, a fuel pump spaced from said fuel control unit, a first T-fitting adapted to be connected to a source of supply of fuel and said T-fitting having a branch line connected to said pump, a second T-fitting having a branch line connected to the fuel inlet of said carburetor, a conduit connecting said first and second fittings together, a conduit extending from said second fitting to said fuel control unit and having a manually operable valve therein, said manually operable valve being normally adjusted to permit a small amount of fuel to pass to the fuel control unit, said fuel control unit comprising a casing, a cover detachably mounted on top of said casing, a clamp for maintaining said cover on said casing, a conduit extending from said casing to said carburetor, said last named conduit being connected to the casing at a level to permit a small amount of fuel to flow to the fuel control unit whereby excess gasoline will flow from the carburetor back to the fuel control unit, said fuel control unit further including an L-shaped bushing having a passageway therein, a needle valve movably mounted in the vertical portion of said passageway for controlling flow of fluid through said passageway, a support member arranged in said housing, a bracket pivotally mounted on said support member, an arm secured to said bracket, a float secured to said arm, whereby as the float moves up and down in the casing in response to changing levels of fuel therein, the needle valve will move up and down to thereby selectively open or close the passageway, a conduit interconnecting said passageway to said first fitting, said needle valve staying closed until fuel in the casing reaches a predetermined level whereby the float will open the needle valve so that the fuel can pass through the last named conduit to the fuel pump and whereby the fuel control unit will take air out of the conduit which connects the first and second fittings together whereby vapor locking will be prevented, a vent pipe extending from said fuel control unit, and means comprising a gasket for preventing foreign matter from entering the fuel control unit, said manually operable valve serving to release most of the air pumped by the fuel pump whereby the air will enter the fuel control unit so that the air will pass out of the conduit connecting the first and second fittings together to prevent vapor lock.

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