Dec. 27, 1938. G. H. HARRIS 2,141,436

FUEL REGULATOR

Original Filed Aug. 27, 1934

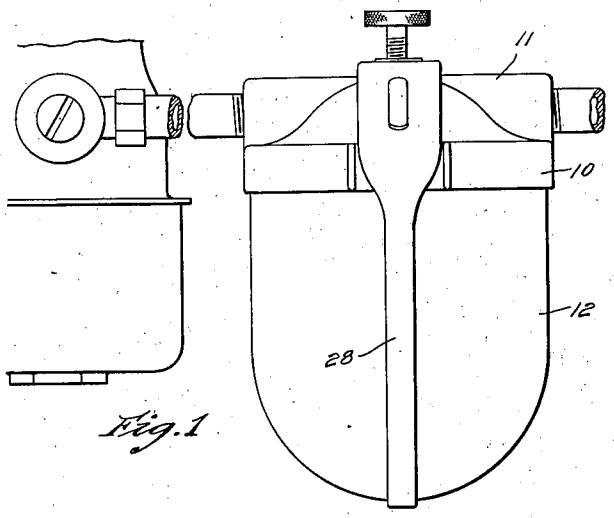


Fig. 1

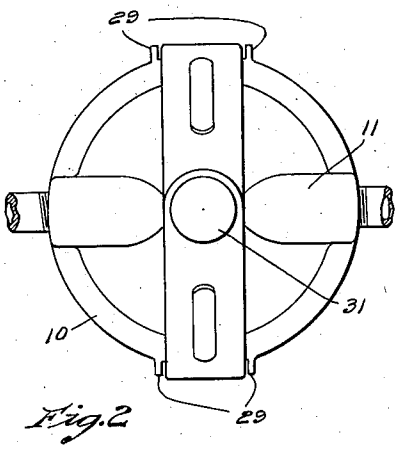


Fig. 2

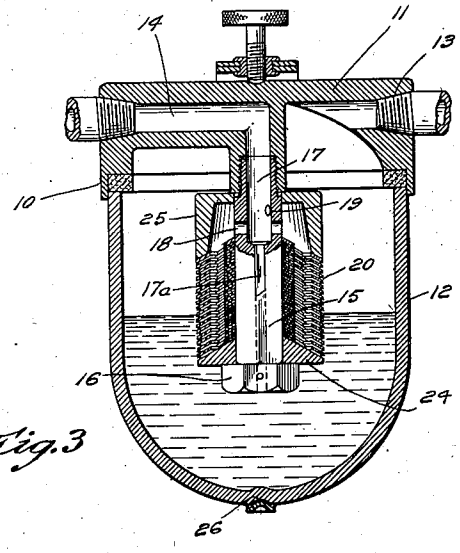


Fig. 3

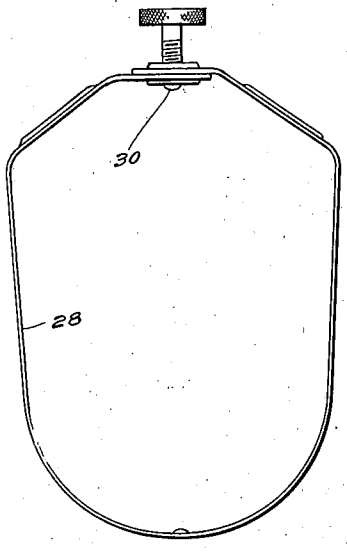


Fig. 4

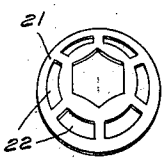


Fig. 5

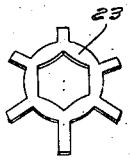


Fig. 6

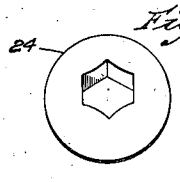


Fig 7

Inventor
Guy H. Harris

By Nathaniel Frucht
Attorney

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FUEL REGULATOR

Guy H. Harris, Attleboro, Mass.

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Renewed May 24, 1938

5 Claims. (Cl. 210—165)

My present invention relates to the automotive vehicle art, and has particular reference to fuel regulators for controlling the flow of fuel to the motor carburetor.

The principal objects of my invention are to provide a regulator which will feed the fuel to the carburetor at a substantially uniform rate, and which will prevent vapor and air lock.

It is a further object of my invention to provide a fuel supply regulation which will eliminate percolation.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawing, and more specifically defined in the claims appended thereto.

Referring to the drawing,

Fig. 1 is a front elevation showing the novel fuel supply regulator as positioned in the motor fuel line of an automotive vehicle;

Fig. 2 is a top plan view thereof;

Fig. 3 is a central vertical section of Fig. 1;

Fig. 4 is a perspective view of the regulator lock strap; and

Figs. 5, 6, and 7 are perspective views of the filter parts.

I have found it feasible to control the flow of fuel to the carburetor so as to provide a steady uninterrupted flow under all operating conditions, thus eliminating vapor lock and gas percolation. The steady flow of fuel has been found to reduce wear and tear on the needle valve, and to permit a better and more accurate control of the fuel volume, thus decreasing the amount of gasoline used; moreover, it eliminates disturbances in the fuel supply and permits a gravity separation of impurities, thus resulting in the feed of a purer gas to the carburetor.

To this end, I have provided a fuel supply regulator which is positioned in the fuel line adjacent the carburetor, and which receives the fuel from a fuel pump and vacuum tank, together with any air present in the fuel lines and pump, the liquid being collected in the regulator, with the air trapped above the liquid, and then filtered during its passage from the regulator to the carburetor, whereby a steady positive feed from the regulator to the carburetor is produced by the pressure action of the imprisoned air on the upper surface of the fuel. A preferred embodiment of the construction I have found suitable for the desired purpose is illustrated in the drawing.

In the drawing, the regulator 10 comprises a cap portion 11 and a base 12, the cap portion having an inlet opening 13 at one side thereof and a conduit 14 of L shape functioning as an outlet conduit, the opening 13 and the conduit 14 being threaded to receive the usual nipple connections from the feed pump or vacuum tank and from the carburetor. Threadedly seated in the lower end of the conduit 14 is a filter support 15 of generally hexagonal form having an enlarged perforated head 16 at the lower end thereof, a flow conduit 17 in the upper portion thereof; and a water drain 17a which leads through the perforated head 16 to the base 12. The flow conduit 17 is provided with lateral ports 18, 19 at its lower end, and communicates with the conduit 14 at its upper end to permit flow from the separator chamber to the carburetor. A filter generally designated by numeral 20 is positioned on the support 15, and includes a plurality of dished perforated washers 21 having perforations 22, which are alternated with a plurality of dished spacing spiders 23, the assembled filter resting on a dished cone 24 seated on the head 16, and having a cup 25 at its upper end, the cup being perforated to snugly fit the top of the support 15 and to slide thereon, thus pressing down on the filter with its lower edges to form a flow chamber, when the filter support, which has a threaded upper end, is threaded upwardly into the conduit 14. The base 12 has a recess or indentation 26 at its lower end, to receive a projection 27 of a strap member 28 which is adapted to encircle the base and to extend over the cap 11 between spaced flanges 29 which are on opposite sides thereof, and preferably integral with the cap, the upper end of the strap having a threaded opening 30 through which a lock screw 31 may be threaded so as to engage the top of the cap and maintain the regulator parts in assembled position. A ring gasket 32 of usual type is seated in the cap to be engaged by the base when assembled therein.

The operation of the novel regulator is now explainable in view of the drawing. The fuel enters through opening 13 and fills the regulator to the level indicated by the dotted line in Fig. 3, an air pocket being formed above the fuel so as to receive any air from the fuel line and to maintain a resilient cushion of air continually above the fuel, the latter passing inwardly between the filter plates and upwardly through the filter plate openings into the chamber formed by the cup, and then through conduit 17 and conduit 14 to the carburetor. The elasticity of the air cushion, which is under compression, thus provides a steady flow of fuel to the carburetor and prevents

air lock or vapor lock, as the vapor or air cannot pass to the carburetor. Moreover, the maintenance of a steady level of fuel permits gravity separation of any solid matter from the fuel, the filter functions as a self cleaning filter because the inflow gasoline continuously washes the filter as it enters, and water is continually drained due to its greater weight.

The described construction prolongs the life of the fuel pump by cushioning the air in the lines from the fuel pump to the carburetor, and reduces wear on the needle valve and the needle seat as there is no pounding or bobbing up-and-down motion of the float, thus permitting the float to be positioned at a lower level in the carburetor bowl. The steady flow of gasoline produces a better functioning of the motor and eliminates pulsations, thus producing a smoother operation at all speeds, and particularly at idling speed. The cap and base are preferably of cast white metal, and the filter support, filter parts, and filter cup are preferably of brass.

While I have described a specific embodiment of my invention, it is obvious that desired changes in the size of the parts, in the materials used for the parts, and in the relative positioning and functioning of the parts, may be made to suit the requirements for different carburetors, within the spirit and the scope of the invention as defined in the appended claims.

I claim:

1. In a fuel flow regulator, a base having a top, a fuel inlet in said top, a fuel outlet in said top, a standard depending from said top, and having a central chamber communicating with said outlet, a member forming an annular chamber about said standard, lateral openings in the walls of said standard communicating said chambers, said chambers having a drainage passage communicating with the lower portion of said base, and a filter interposed between said inlet and said annular chamber.

2. In a fuel flow regulator, a base having a detachable top, a fuel inlet in said top, a fuel outlet in said top, a standard depending from said top, and having a central chamber communicating with said outlet, a member forming an annular chamber about said standard, lateral openings in the walls of said standard communicating said chambers, said central chamber having a drainage passage communicating with the lower portion of said base, a support extending laterally from the lower end of said standard, and a filter positioned between said support and said member.

3. In a fuel flow regulator, a base having a top, a fuel inlet in said top, a fuel outlet in said top, a standard depending from said top and terminating above the lower portion of the base, and having a central chamber communicating with said outlet, a cup depending downwardly from the upper portion of said standard to provide an annular chamber about said standard, lateral openings in the walls of said standard communicating said annular chamber with said central chamber, said central chamber having a drainage passage communicating with the lower portion of said base, and a filter extending from the rim of said cup to the lower portion of said standard.

4. In a fuel flow regulator, a base having a top, a fuel inlet in said top, a fuel outlet in said top, a standard depending from said top and terminating above the lower portion of the base, and having a central chamber communicating with said outlet, a cup depending downwardly from the upper portion of said standard, to provide an annular chamber about said standard, lateral openings in the walls of said standard communicating said annular chamber with said central chamber, said central chamber having a drainage passage communicating with the lower portion of said base, and a filter comprising perforated filter plates extending from the rim of said cup to the lower portion of said standard.

5. In a fuel flow regulator, a base having a detachable top, a fuel inlet in said top, a fuel outlet in said top, a standard depending from said top and having a central chamber communicating with said outlet, a cup depending downwardly from the upper portion of said standard to provide an annular chamber about said standard, passageways in the walls of said standard for communicating the annular chamber with the central chamber, and filter means positioned about said standard and extending from the cup to the lower portion of said standard, whereby fluid flowing from the inlet to the outlet passes through said filter.

GUY H. HARRIS.