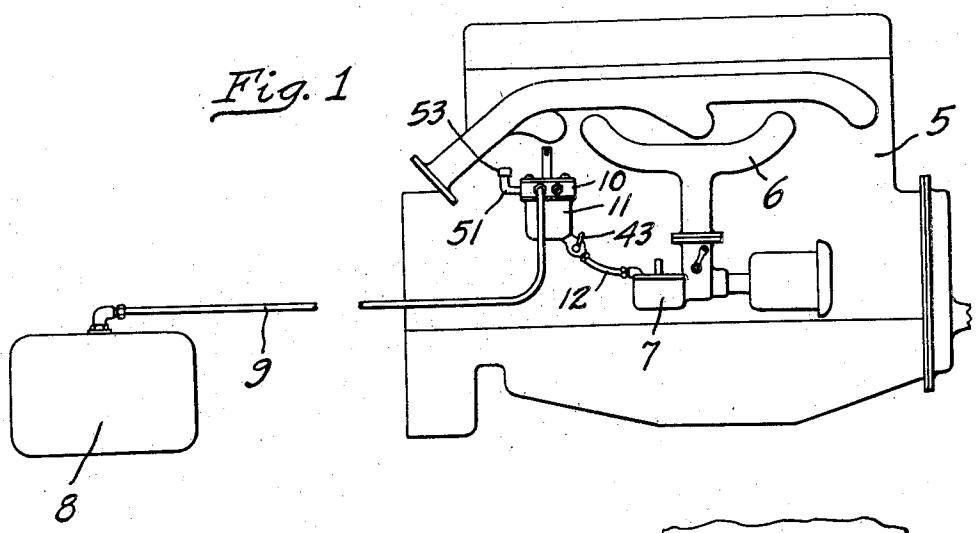
Sept. 27, 1927. 1,643,539

E. BOSSI

LIQUID FUEL SUPPLY MECHANISM FOR MOTOR VEHICLES

Filed Jan. 18, 1926

Fig. 1



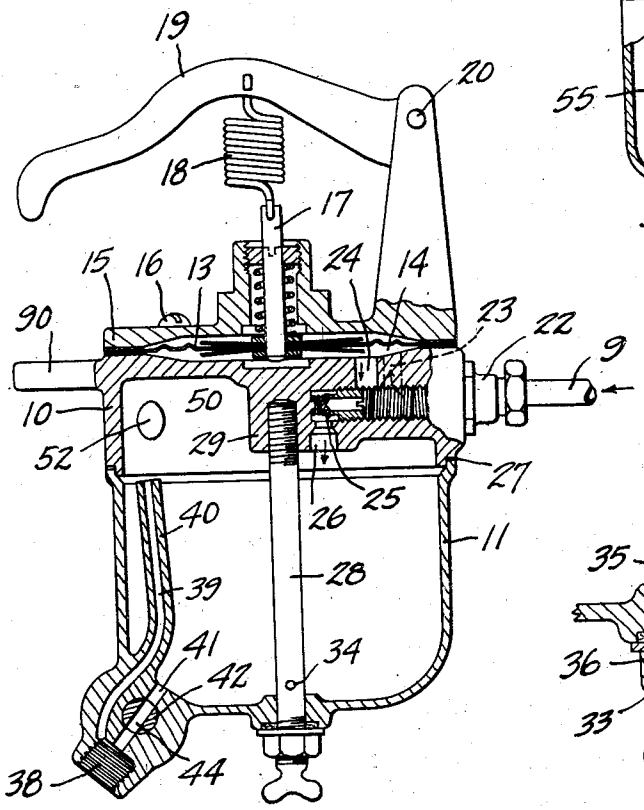


Fig. 2

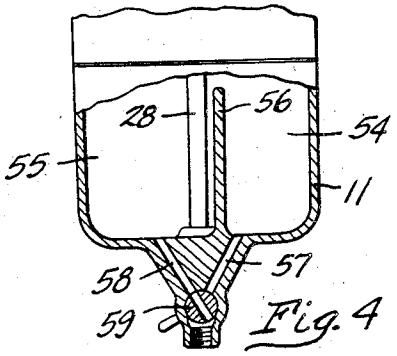


Fig. 4

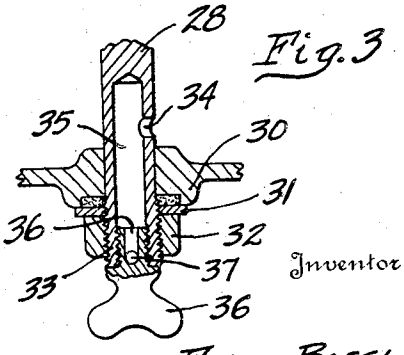


Fig. 3

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UNITED STATES PATENT OFFICE.

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LIQUID-FUEL-SUPPLY MECHANISM FOR MOTOR VEHICLES.

Application filed January 18, 1926. Serial No. 82,155.

It is the primary object of my invention to provide a fuel pump, adapted to be actuated by some part of a motor vehicle, for supplying fuel to the internal combustion engine of the vehicle and to provide in conjunction with such pump a fuel reservoir which will receive fuel delivered from the pump, but from which such fuel will normally pass at a level above the bottom of the reservoir, and to provide means in the reservoir whereby the fuel below such level may, when the occasion requires, be passed to the internal combustion engine independently of the pump.

It is a further object of my invention to provide such a device of simple and compact construction, as well as one which may be easily taken apart for cleaning purposes.

A further object of my invention is to provide such a reservoir which may function as a reservoir for the collection of impurities in the fuel and which may be easily and quickly drained to remove such impurities at intervals.

With the above and other objects in view, my invention consists in the arrangement, combination and construction of the various parts of my improved device as described in the specification, claimed in my claims and shown in the accompanying drawings, in which:

Fig. 1 is a side elevation showing more or less diagrammatically an internal combustion engine and fuel supply source, together with my improved mechanisms.

Fig. 2 is a sectional view illustrating in detail the elements of my invention.

Fig. 3 is a detailed view showing in section a part of my device.

Fig. 4 is a sectional detail view showing a modification of my improved reservoir.

I have shown an internal combustion engine 5, having a conventional intake manifold 6 and a conventional carburetor 7. I have also shown a fuel supply tank 8 having a pipe 9 leading therefrom to a fuel pump indicated generally as 10. The fuel pump may be attached to the engine by flanges 90. Associated with the fuel pump is a reservoir 11 connected by a pipe 12 with the carburetor 7.

The fuel pump is of the diaphragm type such as is illustrated in United States patent application, Serial No. 702,002, filed March 26, 1924, by Albert E. Berdon, wherein a diaphragm 13 is provided in the space 14 between the pump body or casing indicated by the numeral 10 and the pump top 15. The diaphragm is secured in place between the body portion or casing 10 and the top 15 by a plurality of screws 16 and is connected at approximately its center through a rod or shaft 17 and a spring 18 with the lever 19, which is pivoted, as at 20, on the standard 21. The lever 19 is adapted to connect with any suitable portion of the internal combustion engine which will vertically reciprocate it to flex the diaphragm. Upward flexing of the diaphragm 13 will result in drawing fuel from the tank 8 through the pipe 9 and the connection 22 and passage 23 against the bottom of the diaphragm. Downward flexing of the diaphragm 13 will result in forcing fuel through the passage 24 past the spring controlled valve 25, through the passage 26 into the reservoir 11. It will be understood that the spring controlled valve 25 is adapted to be normally closed but to be opened by the pressure of fuel when the diaphragm is flexed downwardly. A similar valve will be provided between the intake coupling 22 and the passage 23, which will be normally held closed, but will be forced to open position by the incoming of the fuel.

It will thus be seen that the two valves will function alternately, as is common in such devices, to permit flexing of the diaphragm to alternately draw in and force out fuel through the desired passages.

The reservoir 11 is fitted against the shoulder 27 on the bottom of the pump casing 10 and is secured in place by a bolt 28 extending through the bottom of the reservoir and threaded into the interior portion 29 in the pump casing 10. A flexible washer 30 is provided around the bolt 28 directly under the reservoir and a flanged metal washer 31 is positioned under the washer 30 to secure the same in place. A nut 32 is screwed on the threads 33 hard against the washer 31.

The bolt 28 may be of tubular formation and have an aperture 34 therein adjacent the bottom of the bolt. The extreme lower end of the bolt 28 may be interiorly screw-threaded to receive a screw threaded plug 35 having wings 36 thereon for tightly screwing the same in place. The plug 35 may be centrally apertured, as at 36, and likewise be provided with a transverse aperture 37 extending from one side thereof to the aper-

ture 36, so that when the plug is unscrewed to a point where the aperture 37 will clear the bottom of the bolt 28, fluid collected in the reservoir 11 may be drained therefrom. This drain is particularly desirable for the purpose of withdrawing water or foreign matters which have settled to the bottom of the reservoir.

The reservoir 11 connects with the pipe 12 through the screw threaded connection 38, which is connected by the passage 39 extending within the tube 40 to a point substantially at the top of the reservoir 11. Another passage 41 is provided adjacent the bottom of the reservoir and connected with the outlet connection 38. A pin 42 extends transversely of the passage 41 and is adapted to be rotated by a handle 43. An aperture 44 is provided in the pin 42 so that when the pin is turned by the handle 43, so as to align the passage 41 and the aperture 44, fuel may be drained from the reservoir 11 to the pipe 12 and thence to the carburetor. Under normal operating conditions, however, the pin 42 is maintained in position so as to close the passage 41 and preserve a supply of fuel in the reservoir 11. It will be apparent that the supply of fuel in the reservoir 11 is particularly useful when the fuel tank 8 has been emptied and it is desired to either run the internal combustion engine for a short distance to arrive at a fuel station, or to pump up fuel from the tank 8 after the tank has been replenished.

It will be further apparent that the entire reservoir may be easily and quickly removed, without disturbing the pump, for cleaning or other purposes.

The pump casing 10 is provided with a space 50 above the reservoir 11, within which air present in the system may be pocketed, so as to form, in effect, a cushion when the reservoir and pump casing have been filled with fuel. This construction and function will add materially to the smooth operation of the pump.

Although the pump will, in most instances, be self-priming, I have provided an elbow pipe 51, extending into the casing 10, as at 52, and having an end cap 53, so that the reservoir 11 may be filled with fuel from the outside, should occasion require it.

In the modification shown in Fig. 3, the reservoir 11 is divided into two compartments 54 and 55, by a dividing wall 56. A passage 57 leads from the compartment 54 and a passage 58 leads from the compartment 55. These passages are joined in a single outlet passage and controlled by a single valve 59 so that swinging of the valve will alternately open one compartment to outward flow and close the other. Thus either compartment may be used as a reserve and the operator need not concern himself as to which way the valve is turned.

It will be obvious that various changes may be made in the arrangement, combination and construction of the various parts of my improved device without departing from the spirit of my invention, and it is my intention to cover by my claims such changes as may be reasonably included within the scope thereof.

What I claim is:

1. In combination, a fuel pump connected to a fuel supply source, said pump having a casing, a reservoir having a bolt extending substantially through the center thereof and connected to a portion of said casing to detachably join it to the reservoir, an aperture adjacent the bottom of the bolt extending to a point outside the reservoir and a plug positioned outside the reservoir and screwed into said aperture for opening and closing the same.

2. A construction as set forth in claim 1 wherein said plug is apertured between its ends to permit fuel to pass through when it has been unscrewed a pre-determined distance.

3. In combination, a fuel pump connected to a fuel supply source, said pump having a casing, a reservoir having a bolt extending substantially through the center thereof and connected to a portion of said casing to detachably join it to the reservoir, said bolt being provided with an aperture adjacent the bottom thereof extending to a point outside the reservoir, and means for opening and closing said aperture.

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