J. R. DILLON.

FUEL RESERVE DEVICE FOR AUTOMOBILES.

APPLICATION FILED APR. 26, 1919.

1,324,191.

Patented Dec. 9, 1919.

2 SHEETS—SHEET 1.

Fig 1

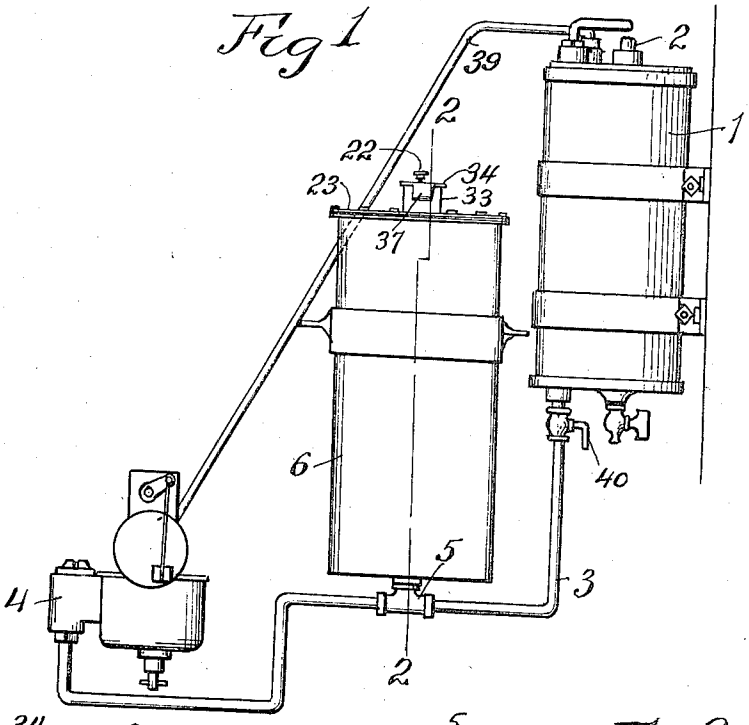


Fig 2

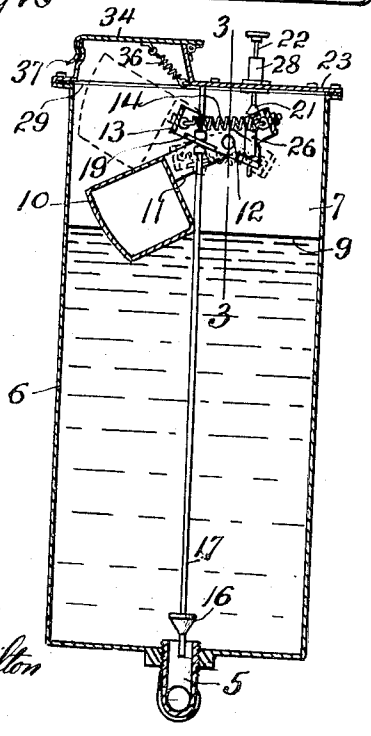


Fig 3

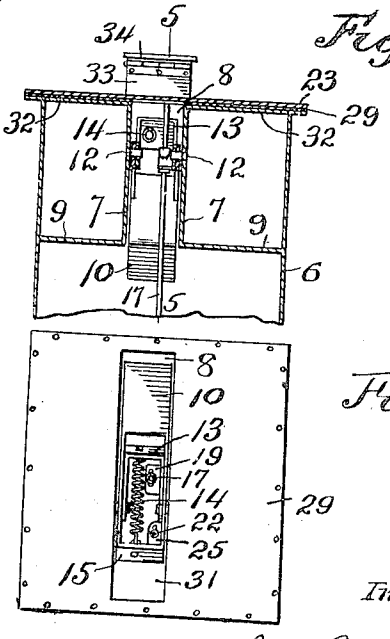


Fig 4

Witness:

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2 SHEETS—SHEET 2.

Fig 5

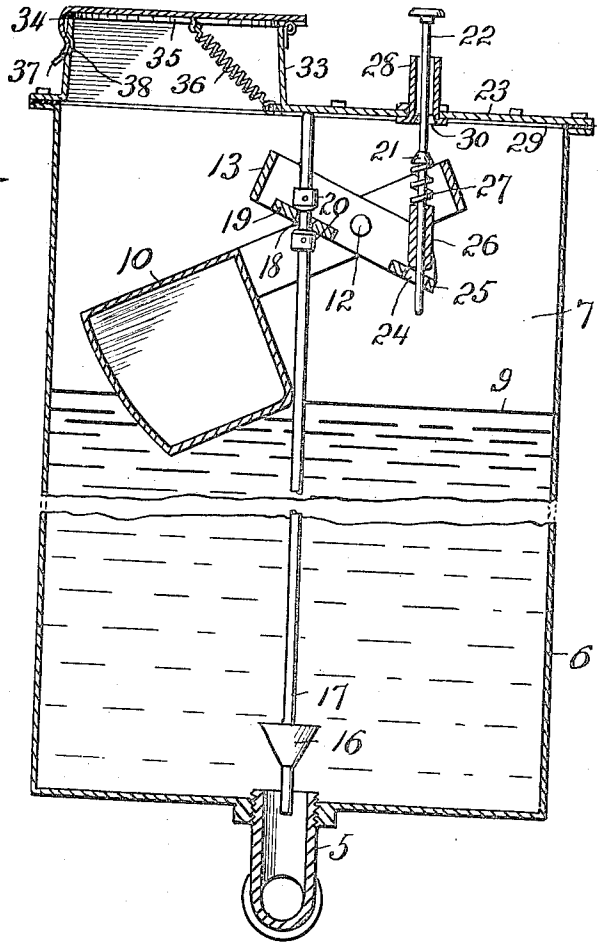


Fig 6

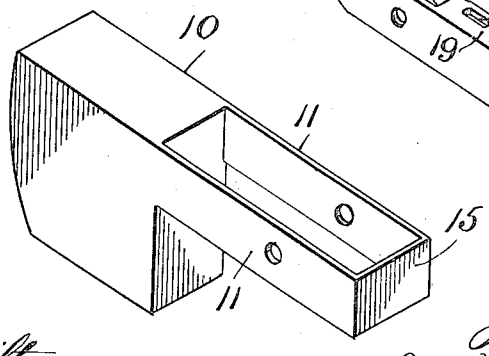
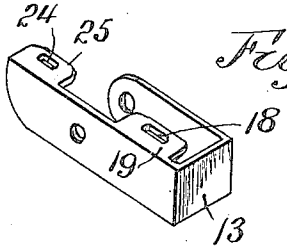


Fig 7



Witness:

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UNITED STATES PATENT OFFICE.

JOHN R. DILLON, OF MUSKOGEE, OKLAHOMA.

FUEL-RESERVE DEVICE FOR AUTOMOBILES.

1,324,191. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed April 26, 1919. Serial No. 292,881.

To all whom it may concern:

Be it known that I, JOHN R. DILLON, a citizen of the United States, residing at Muskogee, in the county of Muskogee and State of Oklahoma, have invented a certain new and useful Improvement in Fuel-Reserve Devices for Automobiles, of which the following is a specification.

My invention relates to improvements in fuel reserve devices for automobiles.

The object of my invention is to provide novel means by which a reserve supply of fuel for automobiles may be automatically maintained ready for use.

My invention also provides a device of the kind described which may be readily attached to cars now in use, which is simple in construction and operation, which is cheap to manufacture, which is durable and not liable to get out of order, and which can be instantly operated as soon as it is discovered that the regular supply tank has become empty.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings which illustrate the preferred embodiment of my invention,

Figure 1 is a side elevation of my improvement shown in connection with the usual fuel supply mechanism.

Fig. 2 is an enlarged vertical sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a top view of the reserve tank, the cap being removed.

Fig. 5 is an enlarged vertical sectional view on the plane of the line 5—5 of Fig. 3.

Fig. 6 is an enlarged perspective view of the float.

Fig. 7 is an enlarged perspective view of the lever to which the float is pivoted.

Similar reference characters designate similar parts in the different views.

1 designates the ordinary vacuum tank of an automobile, which is kept supplied in the usual manner with fuel through a conductor 2, which is connected with the usual supply tank, not shown, carried by an automobile.

3 designates a conductor connected at one end to the bottom of the tank 1, and connected at its other end to the fuel inlet of the usual carbureter 4, the fuel passing by gravity from the tank 1 to the carbureter.

In the conductor 3 is inserted a T-fitting 5 which is connected with the bottom of a reserve tank 6, the fitting 5 serving both as an inlet and as an outlet for fuel for the tank 6.

In the upper end of the tank 6 are provided two vertical partitions 7, which are spaced apart so as to form between them a float chamber 8. Two horizontal partitions 9 respectively connect opposite sides of the tank 6 with the lower ends of the vertical partitions 7. The partitions 7 and 9 form with the walls of the tank 6 two air tight compartments, which by occupying space in the upper end of the tank causes liquid in the tank to rise higher in the float chamber space 8 than otherwise would be the case.

In order that the tank 6 may always be kept supplied with the desired amount of fuel, means are provided which prevents the fuel from passing out from the tank by the fitting 5, excepting at such times as it is desired to use the reserve supply in the tank 6. To effect this function, I provide in the chamber 8 a float 10, Fig. 6, having two parallel arms 11 which are respectively pivoted on two horizontal pins 12, which are respectively secured in the partitions 7, Fig. 3.

A lever 13, Fig. 7, has its arms respectively pivoted on the pins 12 between the arms 11 of the float 10. A coil spring 14 has one end connected to the transverse part of the lever 13, the other end being attached to a transverse connecting portion 15 between the arms 11 of the float. The coil spring 14 is adapted to swing past the axis of the float 10 when the latter is moved from the position shown in solid lines in Fig. 2 to the position shown in dotted lines in said figure. Thus when the float is in the position shown in solid lines in Fig. 2, the lever 13 will be held in the position shown in solid lines in said figure, and when the float is in the position shown in dotted lines, the lever 13 will be held in the position shown in dotted lines. Also the float in passing from one of said positions to the other will, through the intermediacy of the spring 14, cause the lever to swing from one position to the other.

The float 10 and the lever 13 may be em-

ployed to actuate either one or both of two devices which will prevent the liquid from escaping from the tank 6 through the fitting 5. One of these devices comprises a valve 16 which is adapted to seat in the upper end of the vertical arm of the fitting 5, and which is provided with a vertical stem 17 which extends through a slot 18 in a lug 19 which extends inwardly from one of the arms of the lever 13. Two collars 20 attached to the stem 17 are arranged to respectively bear against the upper and lower sides of the lug 19.

When the float 10 is in the position shown in Fig. 5 and in solid lines in Fig. 2, the spring 14 will have pulled the lever to the position shown in Fig. 5 and the valve 16 will be in the raised open position. Liquid will now pass by gravity from the tank 1 through the conductor 3 into the tank 6 through the fitting 5. When the tank 6 is filled sufficiently to lift the float 10 to a position in which the spring 14 will pass the axis of the float, the spring will quickly swing the lever 13 to the position shown in dotted lines in Fig. 2, thereby closing the valve 6 and preventing the escape of fuel from the tank 6 through the fitting 5.

The other device, for preventing liquid passing from the tank 6 through the fitting 5, comprises a valve 21, Fig. 5, and Fig. 2, mounted on a vertical stem 22 below the cap or top 23 of the tank 6. The lower portion of the stem 22 extends through a slot 24 in a lug 25 which extends inwardly from the arm of the lever 13 which is provided with the lug 19, Fig. 7. Encircling the stem 22 and resting on the lug 25 is a sleeve 26, the upper end of which supports the lower end of a coil spring 27, the upper end of which supports the valve 21. The stem 22 extends through a vertical air inlet tube 28, which extends through the cap 23 and is provided in its lower end with a seat 30 for receiving the valve 21.

Between the body of the tank 6 and the cap 23 is a gasket 29 comprising a sheet of packing material provided with a slot 31, Fig. 4, of the same size as and registering with the upper end of the float chamber 8. As shown in Fig. 3, the two air-tight compartments above the horizontal partitions 9 are respectively provided with air-tight tops 32, upon which the sheet gasket 29 rests.

The cap 23 over the float chamber 8 is provided with an upwardly extending tubular portion 33, the lower end of which communicates with the float chamber 8 and the upper end of which has hinged to and covering it a lid 34, which is normally held seated upon a gasket 35, on the top of the tubular portion 33, by a coil spring 36 attached at its ends respectively to the lid 34 and to the cap 23. A downwardly extending lip 37 on the forward edge of the lid 34 is adapted to enter a depression 38 in the portion 33 for locking the lid in the closed position.

When the valves 16 and 21 and the lid 34 are closed, the tank 6 is air-tight and little liquid fuel would escape through the fitting 5, even if the valve 16 were dispensed with, or if used, were in a leaky condition.

By having the tank 6 air-tight, as described, there is no loss of fuel by evaporation and the liability of the tank catching fire or exploding is very much reduced, if not wholly eliminated.

When the tank is filled by gravity, as described, and the float 10 rises so as to swing the lever 13 from the position shown in Fig. 5, and in solid lines in Fig. 2, to the position shown in dotted lines in Fig. 2, the lug 25 on the lever 13 will lift the sleeve 26, and with it the spring 27 and valve 21, causing the latter to rest in the seat 30 prior to the seating of the valve 16 in the fitting 5. Continued swinging of the lever 13 by the action of the spring 14 will seat the valve 16 and compress the spring 27, the function of which is to enable the valve 21 to seat before the seating of the valve 16, thereby eliminating the necessity of fine adjustment, which would otherwise be required to enable both valves to properly seat.

The tank 1 is provided with the usual pipe 39 connecting it with the carbureter 4 or intake manifold where the suction is effected which produces the partial vacuum in the tank 1 in a manner well known.

In the operation of my invention, when the liquid fuel becomes exhausted in the supply tank of the automobile, and in the vacuum tank 1 and conductor 3, the operator of the machine presses down the stem 22, thereby opening the valve 21 and lifting the valve 16 through the intermediacy of the lever 13. Air can now enter the tank 6 through the tube 28 and the liquid fuel in the tank 6 will feed through the fitting 5 and conductor 3 into the carbureter 4. The machine can then be run on the fuel supplied from the tank 6. After the liquid has lowered in the float chamber 8 sufficiently to permit the float 10 to fall to the position shown in Fig. 5, the operator need no longer hold the valve stem 22 depressed, the float now serving to hold the valves open.

When the operator reaches with his machine a place where he can obtain a supply of liquid fuel, he replenishes the supply tank of the machine. The running of the engine will now cause a fresh supply of fuel to pass from the supply tank into the vacuum tank 1, in the usual manner, and the fuel will flow from the vacuum tank 1 through the conductor 3 and the fitting 5 into the tank 6, until the float 10 has risen to a point at which the spring 14 crosses the axis of the float, at which time the lever 13 will be

swung to the position shown in dotted lines in Fig. 2, thereby closing the valves 16 and 21, thus shutting off the discharge of fuel from the tank 6, until the valve stem 22 is again depressed by the operator.

In case that the valve 21 is despensed with, and also its stem 22, the valve 16 may be lifted to permit the tank 6 to supply the carbureter with fuel, by the operator lifting the lid 34 and inserting a finger through the tubular portion 33 so as to depress the float 10 until a sufficient supply of fuel has escaped from the float chamber 8 to permit the float to remain depressed and to thereby hold the valve 16 open.

The compartments in the upper end of the tank 6 are provided for the purpose of reducing the size of the float chamber 8, so as to obtain a quick action of the float.

As the tank 6 may be made so as to hold a pre-determined amount of liquid fuel when the float has reached the uppermost position occupied by it, the operator of a machine equipped with my improvement, by closing a shut-off cock 40, in the conductor 3 intermediate of the tank 1 and fitting 5, may at any time ascertain the mileage per gallon which his machine is making. This can be ascertained by running the machine until the supply in the tank 6 becomes exhausted and then taking note of the mileage which has been made with the fuel supplied by the tank 6.

While, as above stated, either of the valves 16 or 21 may be used separately, the preferred construction embodies both valves as a double safe-guard against accidental escape of fuel from the tank 6 through the fitting 5, due to valve leakage.

I do not limit my invention to the structure shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. The combination with a carbureter, of a fuel supply conductor connected therewith, a reserve fuel tank connected with the conductor so as to be supplied thereby and to supply the conductor with fuel, and means actuated by the rise of fuel in said tank for preventing the discharge of fuel therefrom.

2. The combination with a carbureter, of a fuel supply conductor connected therewith, a reserve fuel tank connected with the conductor so as to supply the same and to be supplied thereby with fuel, a float in said tank adapted to be lifted by the fuel therein, and means actuated by the float in rising for preventing the discharge of fuel from the tank into the conductor.

3. The combination with a carbureter, of a fuel supply conductor connected therewith, a reserve fuel tank so connected with the conductor as to supply the same and to be supplied thereby with fuel, a float in said tank adapted to be lifted by fuel therein, means actuated by the float for preventing the discharge of fuel from the tank into the conductor, and manually operated means for rendering the last named means inoperative.

4. The combination with a carbureter, of a fuel supply conductor connected therewith, a reserve fuel tank so connected with the conductor as to supply the same and to be supplied thereby with fuel, a float in said tank adapted to be lifted by fuel therein, a valve for controlling the discharge of fuel from the tank into the conductor, and means actuated by the float in rising for closing said valve.

5. The combination with a carbureter, a fuel supply tank, and a conductor connecting said tank with the carbureter, of a reserve fuel tank connected with the conductor so as to supply the same and to be supplied thereby with fuel, and means actuated by the rise of fuel in said reserve tank for preventing discharge of fuel therefrom into the conductor.

6. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank connected with the conductor so as to supply the same and to be supplied thereby with fuel, a float in said reserve tank adapted to be lifted by fuel therein, and means actuated by the float in rising for preventing discharge of fuel from the reserve tank into the conductor.

7. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply the same and to be supplied thereby with fuel, a float in said reserve tank adapted to be lifted by fuel therein, means actuated by the float for preventing discharge of fuel from the reserve tank into the conductor, and manually operated means for rendering the last named means inoperative.

8. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply the same and to be supplied thereby with fuel, a valve controlling the discharge of fuel from the reserve tank into the conductor, and means actuated by the rise of fuel in said tank for closing said valve.

9. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply and to be supplied by the same with fuel, a valve controlling the discharge of fuel from the reserve tank into the conductor, means actuated by the rise of fuel

in said tank for closing said valve, and manually operated means for rendering the last named means inoperative.

10. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply and to be supplied by the same with fuel, a valve controlling the discharge of fuel from the reserve tank into the conductor, a float in said reserve tank adapted to be lifted by fuel therein, means actuated by the float for closing said valve, and manually operated means for rendering the last named means inoperative.

11. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply and to be supplied by the same with fuel, a valve controlling the discharge of fuel from the reserve tank into the conductor, a lever, a float in said reserve tank actuated by the rise of fuel therein, means actuated by the lever for actuating said valve, and means actuated by the float for swinging said lever.

12. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply and to be supplied by the same with fuel, a valve controlling the discharge of fuel from the reserve tank into the conductor, a lever, a float in said reserve tank actuated by the rise of fuel therein, means actuated by the lever for actuating said valve, and a spring connecting the lever and float for swinging the lever and arranged to hold the valve open when the float lowers to a predetermined position and to hold the valve closed when the float rises to a predetermined position.

13. The combination with a carbureter, a fuel supply tank, and a conductor connecting the tank and carbureter, of a reserve fuel tank so connected with the conductor as to supply and to be supplied by the same with fuel, a valve controlling the discharge of fuel from the reserve tank into the conductor, a lever, a float in said reserve tank actuated by the rise of fuel therein, means actuated by the lever for actuating the valve, and a spring having its ends connected respectively to the float and to said lever at opposite sides of the axis of the lever and float and arranged to hold the valve closed when the float rises to a predetermined position and to hold the valve open when the float falls to a pre-determined position.

14. The combination with a carbureter, of a main fuel supply means connected therewith, and an auxiliary fuel supply means connected with the main supply means and arranged to receive fuel from and to discharge it to said main supply means, and including a valve for controlling the discharge, float actuated means for closing the valve, and manually operated means for opening the valve.

15. The combination with a carbureter, of a main fuel supply means connected therewith, and an auxiliary fuel supply means arranged to receive fuel from and discharge it to said main supply means, and including manually releasable means actuated by the fuel received by said auxiliary means for preventing the discharge of fuel therefrom.

In testimony whereof I have signed my name to this specification.

JOHN R. DILLON.