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AUXILIARY GASOLINE SUPPLY FOR AUTOMOBILES

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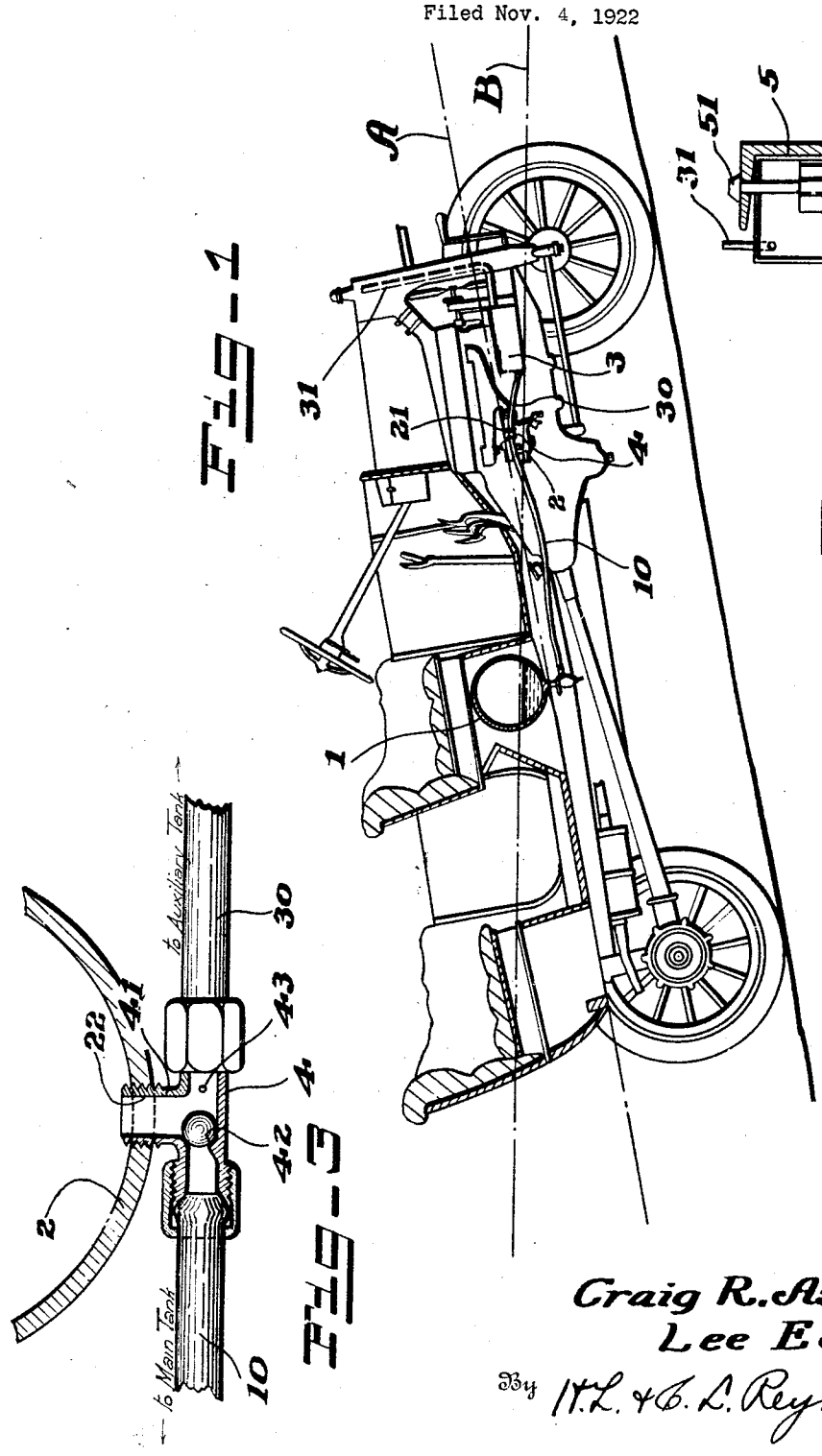


Fig-1

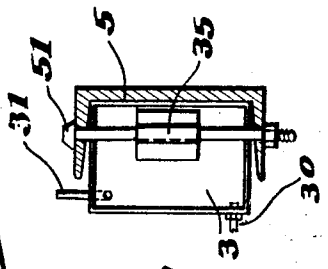


Fig-2

Fig-3

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UNITED STATES PATENT OFFICE.

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AUXILIARY GASOLINE SUPPLY FOR AUTOMOBILES.

Application filed November 4, 1922. Serial No. 599,002.

To all whom it may concern:

Be it known that we, CRAIG R. ASKREN and LEE ECK, citizens of the United States of America, and residents of Moran, Teton County, Wyoming, and Seattle, King County, Washington, respectively, have invented certain new and useful Improvements in Auxiliary Gasoline Supplies for Automobiles, of which the following is a specification.

Our invention relates to an improvement in auxiliary gasoline supply means particularly intended for automobiles.

The principal object of our invention is to provide means whereby, when the normal gasoline feed fails to function by reason of tilting upward of the front end of the car, an auxiliary or emergency means automatically comes into action, and continues, up to the limit of its capacity, so long as the car remains tilted upward, and which then automatically ceases to function as the main gasoline supply again begins to function and again replenishes its own supply.

Other objects, particularly such as relate to structural details, may be ascertained from a study of the following specification and the claims terminating the same, and of the accompanying drawings.

Our invention comprises the novel parts and arrangements thereof which are shown in the accompanying drawings, described in the specification and particularly defined by the claims terminating the same.

In the accompanying drawings we have shown our invention in the form and arrangement which is now preferred by us.

Figure 1 is a longitudinal section through a car employing a gravity feed, shown going up an incline.

Figure 2 is a transverse section through a frame member, illustrating our emergency supply means in end elevation.

Figure 3 is an elevation and partial section through a simple automatic control means.

Automobiles such as the Ford, in which gasoline is fed by gravity from a main supply tank, often experience difficulty in attempting to negotiate a steep grade, not because of failure of the engine's power, but because it is impossible to secure feeding of the gasoline by gravity to the carburetor. This is epecially true if the gasoline supply in the supply tank is depleted.

In carrying out our invention we employ two gasoline supply tanks, one of which may be the usual main supply tank. This main supply tank is located behind and above the carburetor intake, to normally supply gasoline to the carburetor, which is the motor gasoline intake, by gravity. The second or auxiliary tank is located at a level too low to feed to the carburetor by gravity normally, when the car is on a level, and forward of the carburetor. At least, it is well below the normal level of gasoline in the main tank. Each of these tanks is connected to the carburetor and to each other The auxiliary tank, by reason of its normal low position relative to both the main tank and carburetor, will normally be kept filled from the main tank, and will not feed into the carburetor. When the vehicle is tilted upward at such a steep angle that the main tank, which is rearward of the carburetor, lies below the level thereof, the auxiliary tank, being forward of the carburetor, is raised above the level of the carburetor. The gasoline in the auxiliary tank will thereupon feed by gravity to the carburetor. We provide also means to prevent back flow from the carburetor or auxiliary tank to the temporarily lower main tank.

In Figure 1 we have illustrated, in connection with an automobile, the main gasoline supply tank 1 under the front seat, this being connected by the conduit 10 to the intake 21 of the carburetor 2. So long as the automobile is substantially on a level gasoline from the tank 1 will flow to the carburetor with sufficient force, for all points of the gasoline tank are then above the carburetor, as indicated by the dot and dash line A, representing a horizontal line through the bottom of the gasoline tank when the car is level. When the car is tilted on an incline such as shown in Figure 1, however, a horizontal line B through a partially filled tank passes beneath the carbu-

rector intake 21. Unless the gas is at an appreciably higher level than the intake 21 it will fail to flow under such conditions.

The auxiliary gas tank 3 is positioned forward of the intake 21 and when the car is level about at the height of the intake, preferably somewhat lower, but in any event, somewhat lower than the bottom of the main tank 1. A conduit 30 connects this tank 3 to the intake 21. A vent pipe 31 may be provided for exhausting air from the upper portion of the tank 3. The tank 3 being under average conditions lower than the tank 1, it is kept filled therefrom.

The two tanks 1 and 3 are connected by reason of the connection of the conduits 10 and 30 to a common point. This is best accomplished by means of a T-fitting 4, to opposite branches of which the delivery end of each of the conduits 10 and 30 are connected. The lateral branch 41 is connected directly to the carburetor intake 21. Within the T-fitting 4 is provided a valve seat 42, and a ball 44 or other suitable check valve is positioned to seat, as at 42, against a return flow from the carburetor to the main supply tank 1, thereby to cut off the main supply from the carburetor and from the auxiliary tank 3, should there be any tendency for the gasoline in either to flow back to the main supply tank. A pin 43 or other equivalent means may be provided to limit the movement of the ball 44 towards the conduit 30 and prevents this conduit being closed off at any time.

It will be seen that when the car is on the level or running down hill the auxiliary tank 3 is constantly kept full from the main tank 1. When the car reaches a sufficient upward incline back flow to the main supply tank 1 tends to occur, and the ball 44 tends to close off flow from the main tank 1, but if the hill is not steep or if the supply in the tank is at a high level, the pressure of the gasoline from the main tank 1 will overcome the back flow tendency, and will not permit the valve 44 to seat. However, if the hill is sufficiently steep the intake 21 will be raised above the level of gasoline in the tank 1, when the valve 44 will seat, and the tank 3 will commence to feed through the conduit 30, the fitting 4 and its branch 41, to the intake 21.

The tank 3 is made of sufficient capacity to carry the car up an ordinary hill. In most cases a tank containing a quart or more of gasoline will be sufficient. Such a small tank can be secured in any suitable manner within the car, and we have shown it as formed of a size to fit between the flanges of the channel 5 forming a part of the car frame or chassis. In Ford automobiles a bolt 51 passing through the chassis a short distance in advance of the carburetor 2 forms a convenient support for one end of the tank 3, and a strap, as 35, may be secured to an end of the tank and looped to receive the bolt 51.

What we claim as our invention is:

1. In an automobile, in combination with the motor gasoline intake, a gravity feed tank rearward of and normally above said intake, an auxiliary gasoline supply tank located forward of and normally below said intake, and connections between each of said tanks and the intake.

2. In an automobile, in combination with the motor gasoline intake, a gravity feed tank rearward of and normally above said intake, an auxiliary gasoline tank forward of and normally below said intake, connections between each of said tanks and the intake, the level of said tanks being such, relative to the intake and the longitudinal plane of the car, that elevation of the front end of the car will raise the auxiliary tank to such a level that it will feed to the carburetor by gravity when the main tank is lowered to a level where it ceases to feed by gravity.

3. In an automobile, in combination with the motor gasoline intake, a gravity feed tank rearward of and normally above said intake, an auxiliary gasoline supply tank located forward of and normally below said intake, and connections between each of said tanks and the intake, and a check valve in the connection between the main tank and the intake, and operable to prevent back flow into the main tank.

4. In an automobile, in combination with the motor gasoline intake, a gravity feed gasoline supply tank rearward of and normally above said intake, an auxiliary gasoline supply tank located forward of and normally below said intake, a conduit connecting said tanks and connected between its ends to said intake, and means in said conduit permitting feed from the main tank at all times to the auxiliary tank and to the intake, and operable, when the auxiliary tank is raised to feed into the intake, to prevent flow therefrom into the main tank.

5. A gasoline supply system for automobiles comprising a main gasoline tank positioned to normally feed by gravity to the carburetor, an emergency tank having a free flow connection with the carburetor intake and positioned to normally be filled from the main tank and not to feed by gravity to the carburetor intake, and to be raised by the raising of the forward end of the automobile to a level to automatically feed by gravity to the carburetor intake.

6. A gasoline supply system for automobile engines comprising a main tank located rearwardly of and above the carburetor intake, an auxiliary tank located forwardly of and below the carburetor intake, a pipe connecting the main tank with the carbu-

retor intake and with the auxiliary tank and for the latter acting both as supply and discharge pipe, and a check valve in said pipe between the carburetor intake and the main tank placed to prevent back flow to the main tank.

7. The combination with a gravity gasoline feed for automobiles of an auxiliary tank in communication with the carburetor feed supply and below the carburetor just enough to normally prevent gravity feed thereto, and means for cutting off the supply connection from the carburetor to the normal source of supply.

8. A gasoline supply system for internal combustion engines comprising two tanks located one forwardly of and below the carburetor and the other above and rearwardly of the carburetor, said tanks being normally in free communication with each other and with the carburetor, and means for preventing back flow to that tank which is normally above the carburetor.

9. A gasoline supply system for internal combustion engines comprising two supply tanks normally in free communication with each other and with the carburetor, one of said tanks being located above and the other below the carburetor level when the engine is in normal level position, and a check valve preventing back flow from the carburetor to the tank which is normally above the carburetor level.

Signed at Seattle, King County, Washington, this 27th day of October, 1922.

CRAIG R. ASKREN.
LEE ECK.