Oct. 27, 1931. F. A. HAASE ET AL 1,829,277

GASOLINE RESERVE SUPPLY DEVICE

Filed Sept. 5, 1929

Fig. 1.

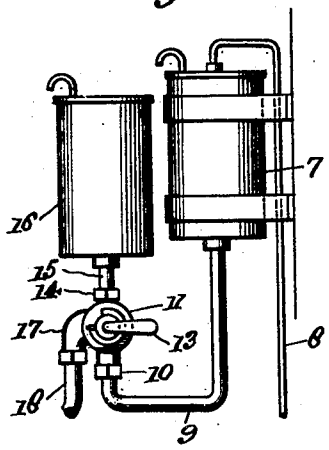


Fig. 3.

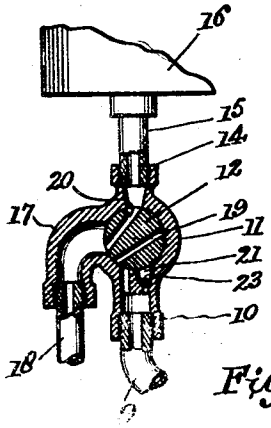


Fig. 4.

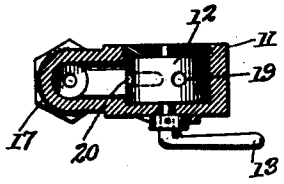


Fig. 5.

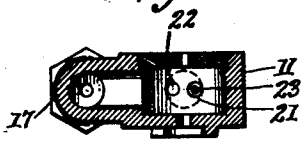


Fig. 2.

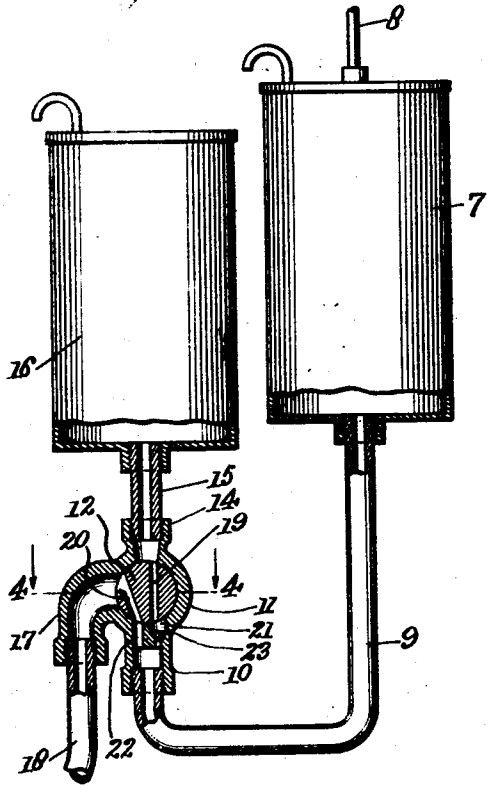
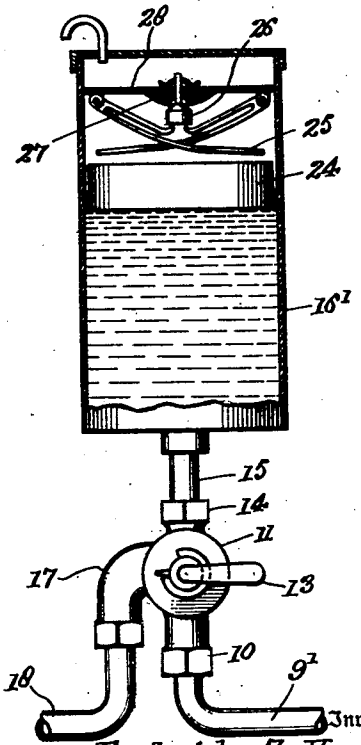


Fig. 6.



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UNITED STATES PATENT OFFICE

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GASOLINE RESERVE SUPPLY DEVICE

Application filed September 5, 1929. Serial No. 390,611.

The present invention relates to improvements in gasoline reserve devices and has for an object to provide for maintaining always on hand a quantity of gasoline or other fuel normally cut off from the carburetor but adapted to be connected to such carburetor in the event that the main gasoline supply becomes inadvertently exhausted.

Although some attempts have been heretofore made to provide reserve for the emergency referred to, so far as we are aware no practicable device has yet been suggested whereby the reserve tank is so connected with the fuel system of the automobile that such reserve tank is always replenished with the fuel.

It is a further object of the invention to provide an improved valve and pipe arrangement between the reserve tank and the fuel system whereby the reserve tank will at all times be kept full of fuel and will be refilled automatically after each emptying operation.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a side elevation of a combined vacuum tank and reserve tank with the improved valve and pipe assembly shown in connection therewith.

Figure 2 is an enlarged view of the same with parts broken away and with parts shown in section and the valve illustrated in the normal position for operation.

Figure 3 is a fragmentary side view with parts broken away and parts shown in section and with the valve indicated in the emergency position.

Figure 4 is a horizontal section taken on the line 4—4 in Figure 2.

Figure 5 is a similar view but with the parts in a subsequent position, and

Figure 6 is a side view with parts broken away and parts shown in section and illustrating a slight modification.

Referring more particularly to the drawings 7 designates a vacuum tank of the kind usually found on automobiles. The vacuum tank is connected by pipe line 8 with the fuel tank usually placed in the rear of the automobile and at a lower level than the carburetor. The vacuum tank 7 functions to raise the fuel from the main tank to the vacuum tank whereby the fuel may flow by gravity out to the carburetor. The out-flow pipe is indicated at 9 and in accordance with the invention this out-flow pipe 9 connects with one branch 10 of a valve casing 11 containing the rotary plug valve 12 which is turned by means of a handle 13 on the exterior of the valve casing. A second branch 14 of the valve casing connects by a pipe 15 with the bottom of the reserve tank 16 and may be placed along side the vacuum tank 7. A third branch 17 of the valve casing connects by a pipe 18 with the carburetor (not shown).

The branches 10 and 14 are preferably diametrically opposite one another, the branch 10 being disposed downwardly and the branch 14 projecting upwardly. The third branch 17 preferably comes off the valve casing laterally at an intermediate portion of the casing 11 and may take the form of an elbow.

The plug valve 12 is provided with two ports, 19 and 20. These ports are to opposite sides of the center of the valve, the port 19 being closer to the center than the port 20 and the port 19 being a straight-through port to set up communication between the lower and upper branches 10 and 14. The port 20 is so shaped that it may set up communication between the lower branch 10 and the lateral branch 17, when the valve is in the position shown in Figure 2; or it may set up communication between the upper branch 14 and the lateral branch 17 when turned to the position shown in Figure 3.

The lower branch 10 is provided with two passages, 21 and 22. The passage 22 is a free uninterrupted passage. The passage 21 is provided with a downwardly closing check valve 23.

In the use of the device, the parts are nor-

mally in the position shown in Figure 2. If we assume that the main fuel tank is supplied with gasoline and the motor running, such fuel will be drawn up from the main supply tank through the pipe 8 and to the vacuum tank 7. In accordance with the demands of the carburetor the liquid fuel will flow down out of the vacuum tank 7 through the pipes 9 and 18 to such carburetor. In so doing this fuel will traverse the free passage 22 in the lower branch 10 and the port 20 of the valve 12 which is in register with the passage 22 and the lateral branch 17.

Now at the same time the fuel will pass through the branch 21, raising the check valve 23. This fuel will pass also through the port 19 of the valve and through the branch 19 and pipe 15 into the reserve tank 16. A reserve of gasoline will accordingly be built up in this tank 16. The reserve supply cannot escape as the check valve 23 closes downwardly.

Should the supply of gasoline in the main tank become exhausted through lack of attention, the handle 13 may be rotated to cause the valve 12 to be shifted to the position shown in Figure 3. In such position the port 19 is entirely masked and the lower branch 10 is cut off from all communication, either with the reserve tank or the carburetor. However, the reserve tank 16 is placed in open communication with the branch 17 through the port 20 and the reserve gasoline may flow to the carburetor, thus affording a reserve supply which will enable the vehicle to gain the next service station.

Now when the main tank supply is replenished at such service station, the valve 12 will be turned by hand back to its initial position shown in Figure 2. The arrangement is such that it is compulsory to do this, or it will become compulsory when the reserve tank supply is exhausted. When such valve 12 assumes the initial position and the flow of gasoline again takes place through the vacuum tank 7, the reserve tank 16 is automatically replenished through the port 19 so that the refilling of the reserve tank does not depend upon the attention of the operator but it is a necessary result of the operation of the device constructed according to the present invention.

The device shown in Figure 6 differs from that shown in the other figures merely in that the invention is shown applicable to fuel systems in which the vacuum tank is dispensed with and a gas pump used. In this instance the pipe 9′ extends to a gasoline pump and the gasoline pump forces the gasoline from the main supply tank to the carburetor and through the improved valve device to the reserve tank 16, which contains a float 24 co-operating with the levers 25 for raising the valve plunger 26 against the seat 27 depending from the baffle plate 28.

It will be noted that the arrangement of passages is such as to make it impossible to draw fluid from the vacuum tank or main supply without placing the reserve tank in the line for refilling.

In Figures 4 and 5, one type of rotary valve is shown, but it will be understood that a tapering plug type valve may be substituted. It will also be understood that provision may be made for operating the valve from the dash or instrument board of the vehicle, as, for instance, by coupling a rod to the handle 13 of the valve.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:

1. In combination with a fuel line, a reserve tank, a valve casing in said fuel line having an inlet branch with a plurality of passages, an outlet branch and a branch to the reserve tank, a check valve in one of said passages opening toward the tank, and a rotary valve in the casing having a pair of ports, said ports being disposed on opposite sides of the center of the valve, said valve adapted in one position to place the check valve passage in communication with the tank and to open the fuel line and in a subsequent position to close the fuel line and open the tank to the carburetor.

2. In combination with a fuel line, a reserve tank, a valve casing in said fuel line having a lower inlet branch with a plurality of passages, an outlet branch and an upper branch to the tank, a check valve in one of said passages opening toward the tank, and a rotary valve in the casing having a pair of ports disposed on opposite sides of the center of the valve, one of said ports being a straight-through port and closer to the center of the valve than the other port, said straight-through port adapted to set up communication between the lower and upper branches in one position of the rotary valve, said other port being at an angle to the straight-through port and adapted to set up communication between the inlet and the outlet branches in one position of the rotary valve and to set up communication between the upper and outlet branches in another position of the rotary valve.

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