

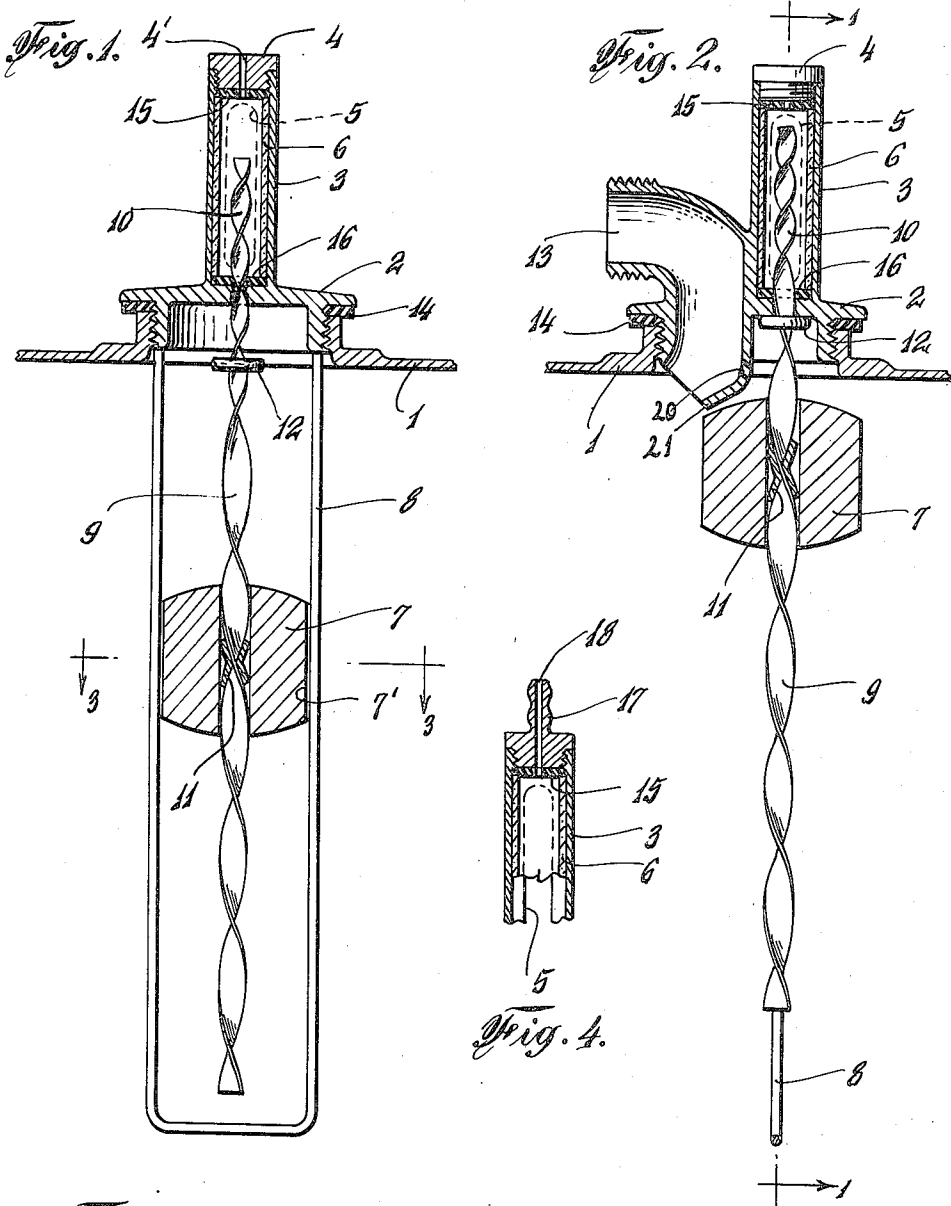
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TANK GAUGE AND FILLING DEVICE

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TANK GAUGE AND FILLING DEVICE

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2 Claims. (Cl. 73-320)

This invention relates to improvements in tank gauge and filling devices and, more specifically, it relates to certain improvements on the fuel tank filling device shown and described in my United States Letters Patent No. 1,673,348.

The present invention has for one of its objects to provide a convenient device, of the character referred to, and which is of such construction that it will be possible to fill a tank of a tractor, truck, boat, airplane or the like by means of the suction effect in the manifold of the running internal combustion engine which obtains its fuel from the tank to be filled, so that no pumping of fuel from a storage tank into the vehicle tank will be necessary and that it no longer will be necessary to lift a heavy fuel barrel for the purpose of making its contents flow into a vehicle tank by means of gravity.

Another object of the present invention is the provision of a combined fuel gauge and tank filling device which will allow to fill a fuel tank of a vehicle with a minimum of effort within the shortest possible time, and without spilling any fuel when the filling is done outdoors in windy weather or in the dark.

Still another object of the present invention is the provision of a device of the character described which will automatically interrupt the flow of fuel from the stationary storage tank to the vehicle tank when the latter is full, thus preventing an overflowing of the vehicle tank and reducing the fire hazard to a minimum and making it unnecessary for the operator to constantly watch the filling process.

Yet still another object of the present invention is the provision of a combined fuel gauge and tank filling device which can easily be attached to the tank filler neck in place of the usual cap, which will work satisfactorily and will serve as a reliable fuel level indicator even if its gauge portion should be bent slightly and if its moving parts become loosened by wear.

A further object of the present invention is the provision of a device of the character described which consists of only a few simple parts and which is inexpensive to manufacture, but well adapted to withstand the rough usage to which such devices are ordinarily subjected.

Further objects of the instant invention reside in any novel feature of construction or operation or novel combination of parts present in the embodiment of the invention described and shown in the accompanying drawing whether within or without the scope of the appended claims and irrespective of other specific state-

ments as to the scope of the invention contained herein.

In the drawing:

Figure 1 is a vertical sectional view of a preferred embodiment of my invention, on the line 1-1, Figure 2;

Figure 2 is a vertical sectional view of the device as it appears when it has been turned ninety degrees around its longitudinal axis relative to Figure 1;

Figure 3 is a cross-sectional view on the line 3-3 of Figure 1; and

Figure 4 is a vertical sectional view of a detail partially broken away.

Similar numerals refer to similar parts throughout the several views.

In the Figures 1 and 2 of the drawing, the numeral 1 denotes a portion of the top wall of a vehicle tank with the filler neck into which the filler cap 2 of my device fits tightly or can be screwed thereto, as in the instance shown, in place of an ordinary cap. A cylindrical body 3 extends upwardly from cap 2 and has normally a plug 4, through which extends a bore 4', screwed into its top portion. A transparent tube 6, which can be seen through slots 5 in the body 3 is contained within the cylindrical body 3 and is located between the packing washers 15 and 16. A float 7, which is guided by wires 8 that engage grooves 7' in the periphery of float 7 (Fig. 3) is adapted to float upon the fuel within the tank, and to rotate a twisted metal strip 9 by means of a piece 11 of metal tubing which is partially flattened in the middle. The top portion 10 of the twisted metal strip has a relatively fine twist in the opposite direction.

There is provided a cork screw connection for portion 10 at 16 through the structural members 2 and 16, so that the reversely twisted, finer pitched portion 10 of strip 9 will be advanced longitudinally of indicator housing 3 only a fractional part of the longitudinal displacement of the float, with changes in liquid level. The purpose of this construction is to permit the use of a relatively short indicator housing 3, in relation to the overall movements of the float.

A shut off valve 12 is attached to the twisted strip 9 in such a manner that, when the tank is full, it will close the opening in cap 2, through which the twisted strip extends. In Figure 1 the parts 7, 9, and 12 are shown in a position when the tank is approximately half filled, whereas in Figure 2 said parts are shown when the tank is full. A bent pipe 13 adjacent to the body 3 also extends through cap 2, and its upper end

portion is adapted for attaching a fuel hose thereto which leads to a storage tank or barrel (not shown); whereas its lower end portion 21, which projects into the vehicle tank, is shaped in such a manner that it deflects the incoming stream from the float 9 (Fig. 2). The small perforation 20 (Fig. 2) permits faster idling of the engine while filling fuel into the tank by the suction method referred to hereinafter.

If the vehicle tank is to be filled by means of a pump, a fuel hose (not shown) can be inserted into or attached to the pipe 13, which (after the filling) can be closed by means of a cap (not shown) that may be screwed upon the upper portion of pipe 13. But if the vehicle tank is to be filled without the usual pumping facilities, for instance, if fuel in a barrel that stands on the ground is to be transferred into the vehicle tank, the plug 4 is removed and a suction tube connection 17 (Fig. 4) is screwed into the part 3; then one end of a suction tube (not shown) is attached to the tube connection 17, and its other end is attached to a shut-off cock (not shown) on the intake manifold of the internal combustion engine of the vehicle. One end of the fuel hose (not shown) is tightly connected to the upper end of pipe 13 and its other end is inserted into a fuel barrel or into a stationary storage tank. To prevent the end of the hose from sticking to the bottom of the barrel, it is advisable to provide holes in the hose near the end. To prevent water and rust from entering the hose, the hole in the end should be plugged. With the engine idling at a good speed, the shut-off cock on the intake manifold of the engine is opened, and the fuel supply to the carburetor is shut off. While the engine is thus idling, it will empty the carburetor and the suction in the intake manifold will drain the air from the vehicle tank through the bore 18 (Fig. 4), thus causing a flow of fuel from the barrel or storage tank into the vehicle tank through pipe 13, the cap 2 being tightened firmly upon the filler neck of the vehicle tank by means of an ordinary packing ring 14. While the fuel is passing through tube 13, a small spray of fuel will pass through the perforation 20 thus maintaining a combustible mixture in the intake manifold after the fuel in the carburetor is used up. At this time, the operator will manipulate the carburetor throttle to a slow idling position, and the engine will run slowly and smoothly. When the vehicle tank is filled up, the automatic shut-off valve 12 will close (Fig. 2), thus stopping the engine as it will no longer be supplied with fuel vapor from the vehicle tank. A stopping of the engine will automatically interrupt the flow of fuel into the vehicle tank.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent in the United States:

1. In a tank gauge and filling device having a filler cap which fits the filler neck of a tank, a tube mounted with its lower end portion upon the top of the filler cap and connected to the interior of the tank by means of a bore in the filler cap through which extends a fluid level indicator that is actuated by a float, a pipe connection at the top of said tube adapted for attaching a suction tubing that leads to a cock on the intake manifold of an internal combustion engine, a bent pipe adapted for attaching a fuel hose thereto and extending through the filler cap adjacent said tube and having a perforated lower end portion which projects into the tank and which is shaped in such a manner that it deflects the incoming fuel stream from said float, and a shut-off valve attached to said float actuated fuel level indicator and adapted to close said bore in the filler cap when the tank is full, all substantially as described.
2. In a tank gauge and filling device having a filler cap which fits the filler neck of a tank and carrying at its outer side a transparent tube which is connected to the interior of the tank by a bore through which extends a fluid level indicator that is actuated by a float, the combination of a pipe connection at the top of said transparent tube adapted for attaching thereto a suction tubing that leads to a cock on the intake manifold of an internal combustion engine, with a bent pipe adapted for attaching a fuel hose thereto and extending through the filler cap adjacent said transparent tube and having a lower end portion which projects into the tank and which is shaped in such a manner that it deflects the incoming fuel stream from said float; and a shut-off valve attached to said indicator and adapted to close the opening in the filler cap when the tank is full, all substantially as described.

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