

June 12, 1928.

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1,673,348

FUEL TANK FILLING DEVICE

Filed May 20, 1926

2 Sheets-Sheet 1

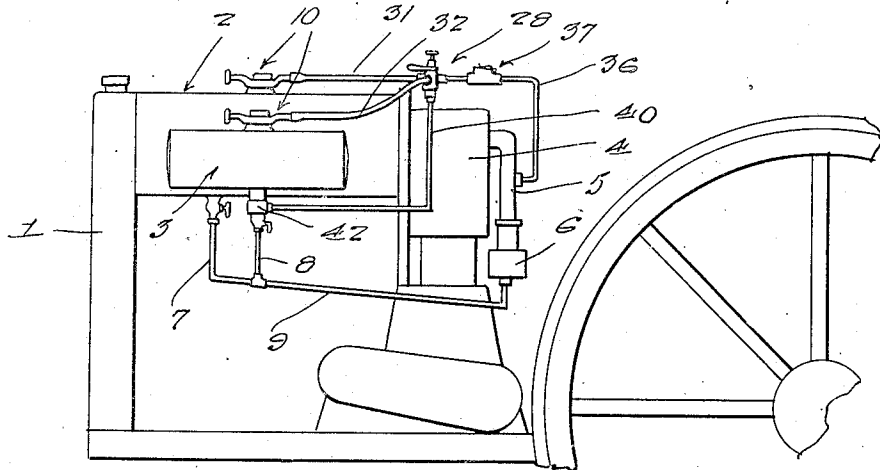


Fig. 1.

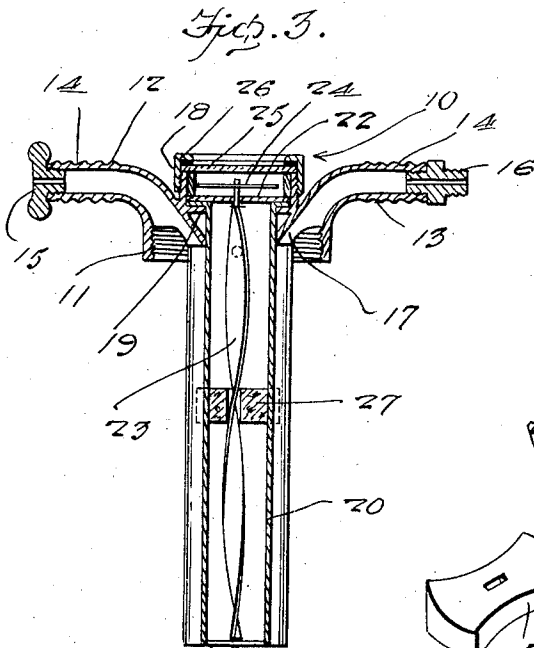


Fig. 3.

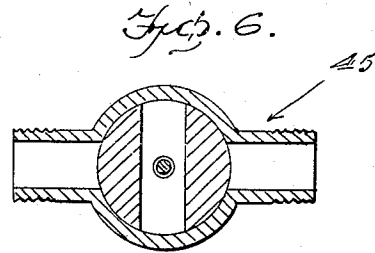


Fig. 6.

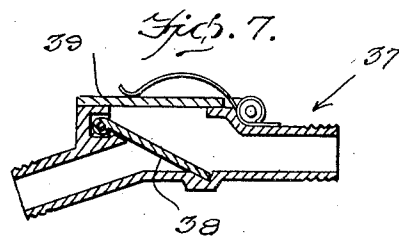


Fig. 7.

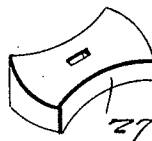


Fig. 9.

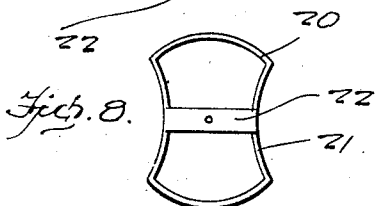


Fig. 8.

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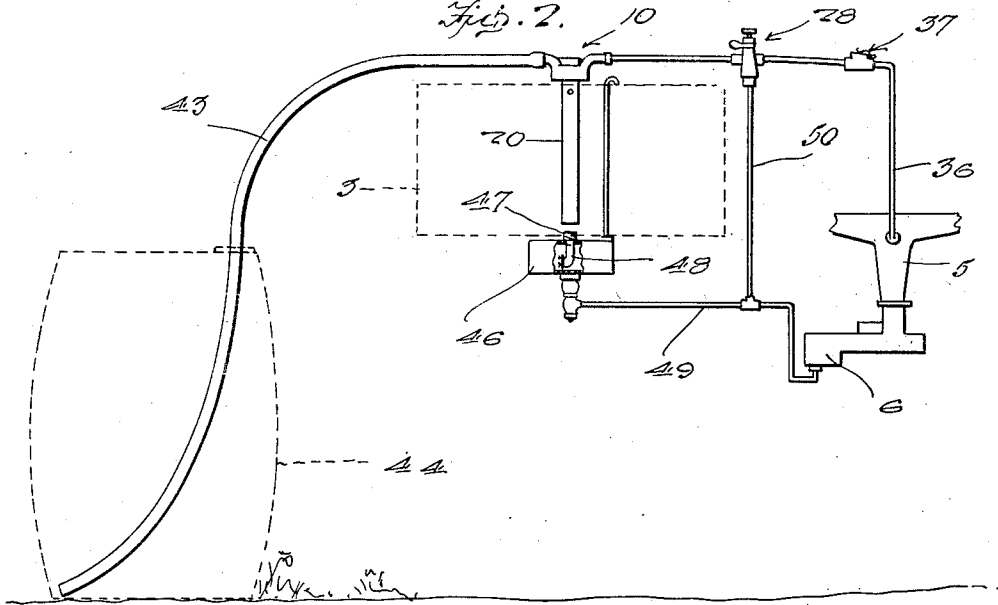
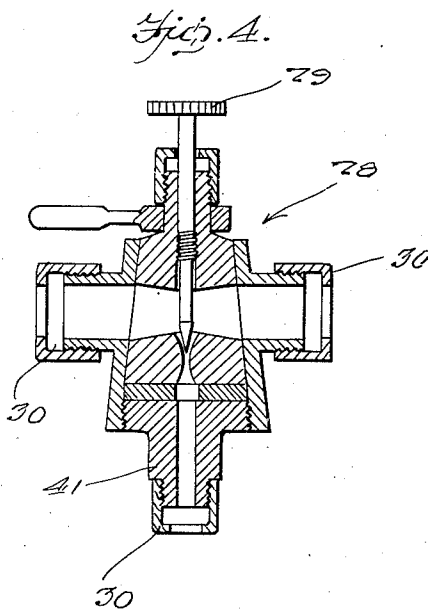
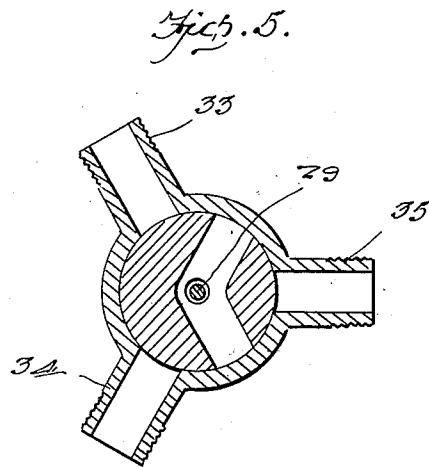
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FUEL TANK FILLING DEVICE

Filed May 20, 1926

2 Sheets-Sheet 2



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1,673,348

UNITED STATES PATENT OFFICE.

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FUEL-TANK-FILLING DEVICE.

Application filed May 20, 1926. Serial No. 110,584.

This invention relates to an improved device capable of supplying fuel to the tank or reservoir of an automobile engine while the engine is in operation.

5 The invention has more specific reference to a device which was particularly designed for use in association with a tractor so as to permit the tractor to be operated continuously for actuating belt pulleys and without
10 requiring stopping of the engine to refill the tank.

Briefly, the invention has reference to a device which is adapted to replace the customary screw threaded filler cap, this device
15 having means for connection of a fuel conducting hose or the like, and means for attachment of a suction conduit which is employed for sucking the fuel through the hose and device and feeding it into the tank.

20 The specific details and their relative arrangement will become readily apparent from the following description and drawings, and by carefully considering the same, the operation and advantages will also be
25 clear.

In the drawings:—

Figure 1 is a side view of a portion of a conventional form of tractor equipped with devices constructed in accordance with the
30 present invention.

Figure 2 is a somewhat diagrammatic view showing the manner in which the fuel is taken into the tank from an appropriate receptacle.

35 Figure 3 is a vertical section through the part forming the major detail of the invention.

Figure 4 is a detail sectional view of one form of control valve which is used in association with the device.

40 Figure 5 is a section through the valve shown in Figure 4.

Figure 6 is a view like Figure 5 showing a slightly different form of valve.

45 Figure 7 is a longitudinal section through a safety valve which is used as a part of the invention.

Figure 8 is a bottom plan view of the float chamber seen in Figure 3.

50 Figure 9 is a perspective view of the float.

In the drawings, in Figure 1, the reference character 1 designates a radiator, 2 the main fuel tank, 3 an auxiliary fuel tank, 4 the engine, 5 the intake manifold, and 6 the carburetor. Valved pipes 7 and 8 are connected
55 with the respective tanks 2 and 3 and depend

therefrom and connect with a fuel conducting pipe 9 which leads through the carburetor as here shown.

In accordance with my idea, the usual
60 screw closing cap for the tanks 2 and 3 are replaced with devices generally indicated by the reference characters 10. At this time I wish to call attention to the fact that all tractors are not provided with a dual arrangement of tanks. Moreover, as each device
65 10 is of the same construction, a description of one will suffice for both. At this time I would therefore direct attention to Figure 3 wherein one of the devices is
70 shown in detail. In this figure the reference character 11 designates an internally screw threaded skirt which is adapted to screw on the usual filler neck on the tank. This skirt
75 is provided with integral diametrically opposite branches 12 and 13 which are corrugated as at 14 to permit connection of a flexible tube or hose therewith. A bored plug 15 is fitted into the end of the branch
80 12. In addition, a bored externally screw threaded nipple 16 is fitted into the end of the branch 13. The inner ends of these branches are formed with deflector shields 17. Moreover, there is an upstanding screw threaded flange 18 of circular form provided
85 here, and extending inwardly from this flange is an annular supporting ledge 19. This ledge serves to support a float chamber which is formed within an especially designed tube 20. This tube is simply formed at
90 its upper end with an outstanding marginal flange which rests removably upon the ledge 19. By referring to Figure 8 it will be seen that this tube 20 is provided with opposed concaved walls 21 and is formed at its
95 bottom and top with appropriate apertured spiders 22. Fitted rotatably into the apertures in the spiders are the reduced journals on the opposite ends of a twisted gage operating member 23. It will be noted that an
100 appropriate indicator 24 is mounted on the upper end of the member 23. This indicator is confined in an appropriate housing which is formed by a removable glass disc 25 held in place on the flange 18 by clamping ring
105 26. With this arrangement it will be seen that all the parts of the device are detachably connected together so that they may be replaced in case of injury. I would also direct attention here to an especially designed
110 float 27 of cork which is slidably mounted on the operating member 23 and is confined

in the correspondingly shaped tubs 20. Obviously, the float rises according to the level of the fuel in the tank and the indicator serves to show the approximate amount of fuel then in the tank.

The device will be accompanied by a special three-way valve 28, which as shown in Figure 4 is provided with a rotary plug in turn provided with an independently adjustable needle valve 29. Mounted on the various branches as shown here are appropriate couplings 30 for connecting pipes with the branches. For instance, where two of the devices 10 are employed on two fuel tanks 2 and 3, individual conducting tubes or their equivalent 31 and 32 will be connected with appropriate branches, for instance 33 and 34 on the valve shown in Figure 5. In addition, these tubes will be connected with the nipples 16 of the devices 10. Connected with the remaining branch 35 is a suction conducting pipe 36 which is in turn connected at its opposite ends with the intake manifold 5. Located in this pipe 36 is a safety valve 37 of the construction indicated in Figure 7. As here shown, it simply embodies an internal pivotally mounted flap valve 38 and a spring retained closing valve 39. Obviously this valve is to serve as a safety appliance in the case of back fire of the engine. Attention is also directed to a by-pass 40 which is connected to the lower branch 41 of the three way valve. This communicates with the portion 42 of the aforesaid valved pipe 8. At this time I would direct attention to Figure 2 wherein it will be seen that the reference character 43 represents a rubber hose which is adapted to extend down into a fuel supply barrel or the like 44. Thus, when the engine is in operation and suction is produced through the pipe 36, the valve 28, and one of the conduits 31 or 32, the fuel in the barrel 44 will be sucked upwardly through the hose 43 and supplied to the tank 2 or 3 as the case may be. Where only a single tank is provided, the three way valve 28 will be replaced with a single way valve, or rather a double way valve 45, as shown in Figure 6.

It is desirable to permit refilling of the tanks while the engine is still in operation, and to do this I contemplate providing a small tank or reservoir 46 having a screw threaded neck 47 screwed into an opening in the bottom of the tank 3 as shown in Figure 2.

The coupling 47 is provided with a valved passage 48 which conducts fuel from the tank 3 into this tank 46. From the tank 46 the fuel passes through the pipe 49 to the carburetor 6. The by-pass 50 is here connected with the bottom branch 41 of the valve 28 or 45 as the case may be, and when the needle valve is open it is obvious that suction will be produced through the by-

pass in the pipe 49, thus drawing fuel from the auxiliary tank 46. Thus, by having this tank 46 full of fuel, it will suffice to run the engine while the other two tanks are being filled. It is of course understood that one tank 3 may be filled with one grade of fuel, and the other tank 2 may be filled with another grade of fuel from separate sources of supply. Moreover, these are not filled at the same time because the three way valve is turned so that only one of them is filled at a time.

This device would no doubt operate satisfactorily as a gauge and even as a fuel pump, without the assistance of by-path 40, 50, but when it would be desired to fill the fuel tank quickly, the large amount of air introduced into the intake manifold, by way of the valve 28 and the tube 36, might interfere materially with the successful operation of the engine. By introducing a small amount of fuel, however, into the air current in the tube 36, a combustible mixture is maintained. This is accomplished by the by-path 40, 50 and the amount of fuel so introduced is controlled by the needle valve 29. This valve is so located that its adjustment need not be disturbed except when it is desired to use the by-path 40, 50 as a primer, in which case it is opened a little wider, then priming is accomplished by opening the valve 28 and cranking the engine. Fitting 42 is simply a T-union with one end threaded to fit the opening in the bottom of the gasoline tank, the other two ends are threaded for connection to by-path 40, 50 and to the carburetor. Where more than one fuel tank is used, as is the case with the kerosene tractor shown in Figure 1, an auxiliary tank as 46 is not necessary as the engine can be supplied with fuel from one tank while filling the other and vice versa. It is not necessary or desirable to fill the fuel tank when the engine is not running, except when the operator is so negligent as to allow both fuel tanks to run dry, and even then it is only necessary to fill enough fuel to start the engine, this can be accomplished in the usual way.

No doubt, by reading the description in connection with the drawings, a clear understanding of the invention will be had. Therefore, a more lengthy description is thought unnecessary. Minor changes coming within the field of invention may be resorted to if desired.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination, a main fuel tank, an auxiliary fuel tank, means connected with the filler necks of said tanks to permit fuel to be supplied to said tanks, separate conduits connected with said means, a control valve with which said conduits are con-

5 nected, a suction conducting pipe connected with said control valve, and an internal combustion engine having an intake manifold with which said suction conducting pipe is connected.

10 2. In combination, a main fuel tank, an auxiliary fuel tank, means connected with the filler necks of said tanks to permit fuel to be supplied to said tanks, separate conduits connected with said means, a control valve with which said conduits are con-

ected, a suction conducting pipe connected with said control valve, a by-pass also connected with said valve and with said auxiliary tank, independent means for controlling the suction through said by-pass, an internal combustion engine having an intake manifold with which is connected said suction conducting pipe. 15

In testimony whereof I affix my signature. 20

SEVERIN F. CZERNER.