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2,432,025

COLLAPSIBLE GASOLINE TANK

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Fig. 1.

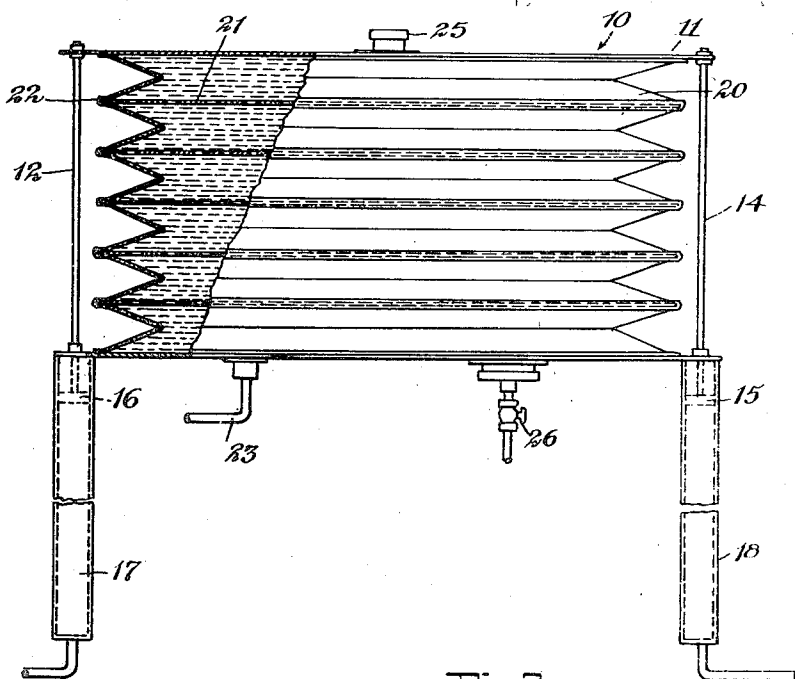


Fig. 2.

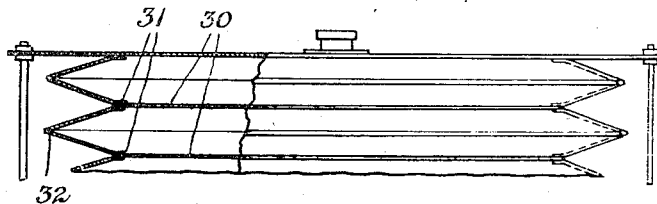
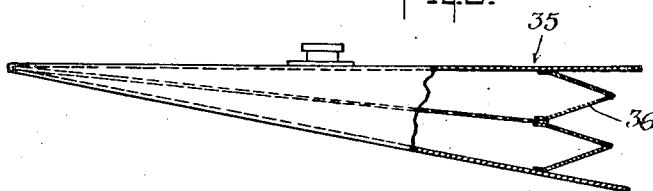


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE

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COLLAPSIBLE GASOLINE TANK

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1 Claim. (Cl. 158—46)

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This invention relates to storage tanks and more particularly to tanks adapted to be installed in airplanes and elsewhere where a highly inflammable fluid such as gasoline is to be carried in connection with an internal combustion engine having conventional fuel drawing means.

One of the greatest hazards of using gasoline is its inflammability. This is particularly true in fighting planes where a gasoline storage tank may be ignited by incendiary bullets. The danger of fire is not great where a tank is full and little oxygen is present but the hazard increases as the gasoline is used and as oxygen enters the tank to replace the used liquid.

An object of this invention is to provide a tank which will always be full until the supply of fuel is exhausted.

A further object is to provide a tank which will not at any time contain air or explosive fuels but which will collapse as fuel is used.

Other objects and advantages of my invention will appear as the description proceeds.

In the accompanying drawings—

Figure 1 is an elevation partly in section of a tank embodying my invention;

Fig. 2 is a modification thereof;

Fig. 3 is a view of another form of tank.

My tank 10 may be made of any suitable material such as synthetic rubber and of course may be surrounded by armor or other supporting material. In the accompanying drawing I have shown what would be a rectangular tank but it will be appreciated that it may be of any shape desired. The top 11 of my tank is provided with a plurality of arms or rods 12 and 14 which engage pistons 15 and 16 and cylinders 17 and 18. The pistons 15 and 16 and cylinders 17 and 18 are parts of a conventional hydraulically operated system whereby when the fluid is forced up against the pistons 15 and 16, the tank 10 will expand and when the fluid is sucked away from the pistons 15 and 16, the tank 10 will be caused to collapse. The body of the tank 10 consists of a series of collapsible sections 20. In the form shown in Figure 1 perforated plates 21 engage each junction 22 to prevent splashing of the fluid. Pistons 15 and 16 may be hydraulically operated so that when gasoline is drawn off by conventional fuel drawing means through the pipe 23 the pistons will be retracted to collapse the tank. The force with which the tank is collapsed is sufficient only to prevent the formation of empty space between the fuel and the tank walls as the fuel is consumed and thereby to prevent the accumulation of explosive gasses or vapors in said tank; it is insufficient to expel any of the fuel contents of said tank or to interfere in any way with the fuel feeding system. It will be appreciated that the same principle may be used without the hydraulic controls and the tank may be

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allowed to collapse under its own weight. A capped opening 25 will be provided for filling the tank or a filler valve 26 can be used. In the form shown in Figure 2 the plates 30 are fastened at the junctions 31 and folds 32 will move inwardly as the tank is filled rather than outwardly, as shown in Figure 1. Plates 21 and plates 30 serve also to prevent the side walls of the tank from bulging outwardly.

In Figure 3 the tank 35 is more of a bellows shape, having a collapsible section 36 at one end. It will be appreciated that my improved tank will always be free of air and should an incendiary bullet be fired through the tank there would be very little danger of explosion or fire, especially if a conventional self-sealing material were used.

I claim:

In a fuel supply system, a fuel tank comprising a top plate, a bottom plate spaced therefrom, and four flexible sides which are attached to each other and to said top and bottom plates, said flexible sides being foldable in accordion fashion, perforated anti-splash plates extending horizontally between said top and bottom plates and parallel therewith, said perforated plates being attached along their marginal edges to the folds in said flexible sides, an inlet port in the top plate through which the tank may be filled, an outlet port in the bottom plate through which the fuel may be taken out of the tank, a pair of hydraulic fluid cylinders connected to the bottom plate, hydraulic fluid actuated pistons in said cylinders, piston rods connected to said pistons, and said piston rods being connected to the top plate, said piston, piston rod and cylinder assemblies being adapted for use as hydraulic actuating means for collapsing the tank as fuel is drawn therefrom, and preventing the formation of space between the top plate of said tank and the fuel level.

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