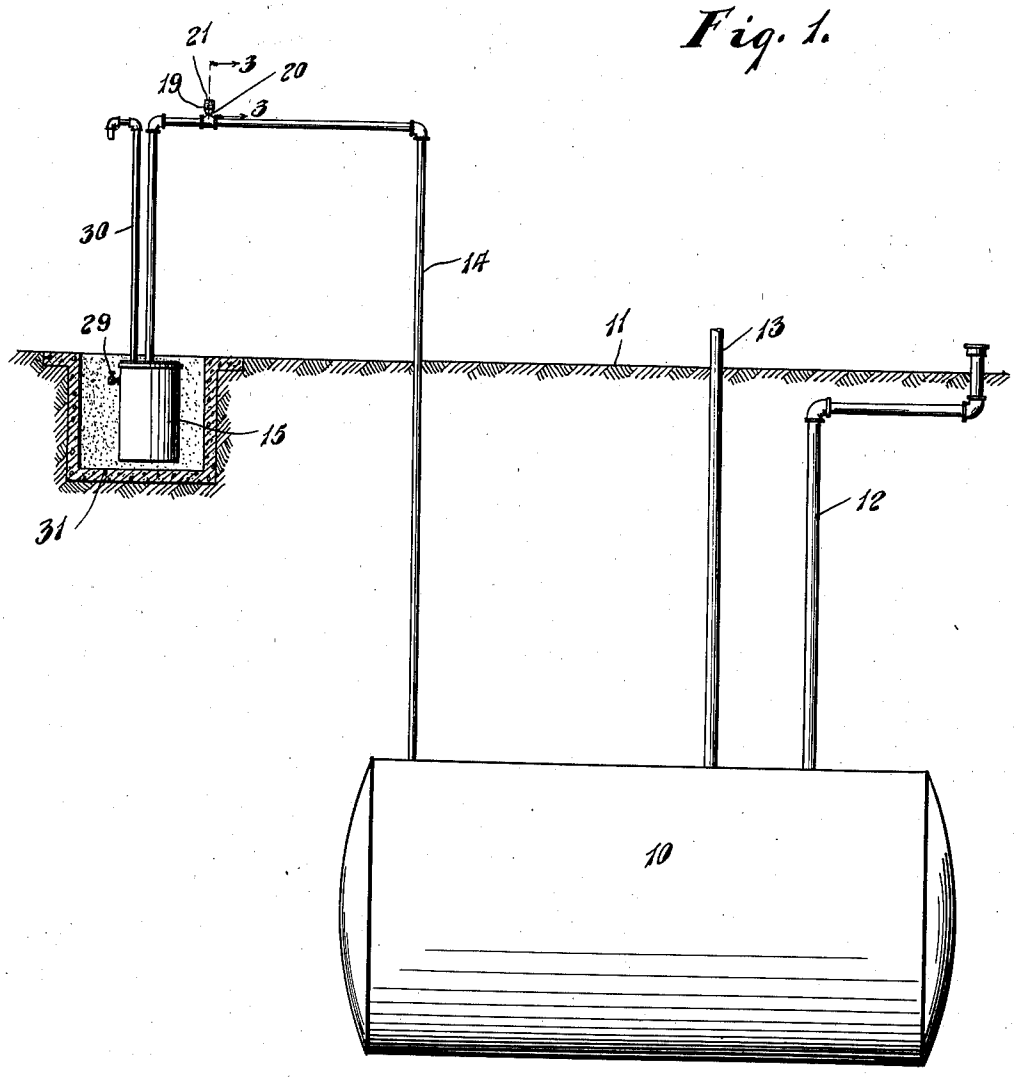
April 13, 1937. W. J. SCHLICHT, JR 2,077,019

SALVAGING FUEL VAPOR

Original Filed July 6, 1933 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

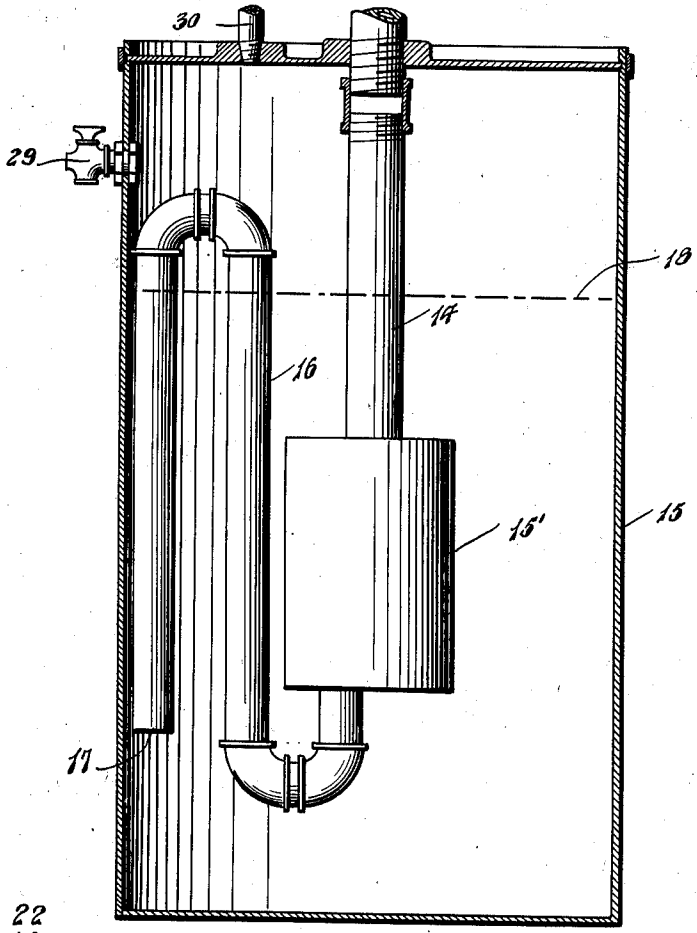
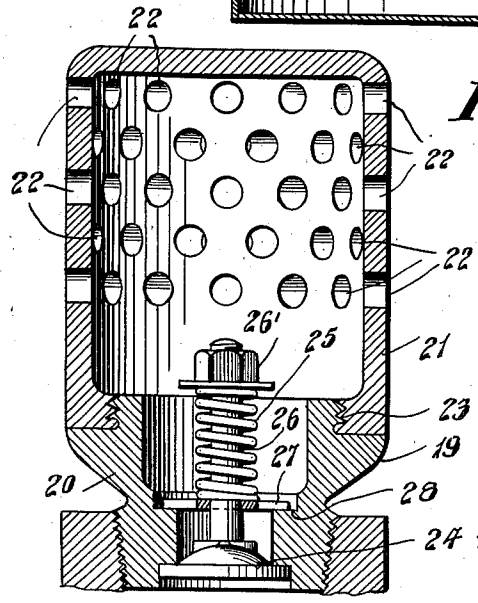


Fig. 3



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SALVAGING FUEL VAPOR

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Application July 6, 1933, Serial No. 679,262
Renewed December 10, 1936

4 Claims. (Cl. 220—85)

This invention relates to means and methods whereby gasoline vapors or other fuel vapors from a storage tank, usually discharged into the atmosphere, may be condensed and the condensate used rather than wasted.

It is particularly aimed to provide a trap, in connection with the storage tank, containing a calcium chloride solution into which the vapors are supplied, the supply means having a vacuum valve therein.

It is also aimed to provide a means whereby the danger of explosion from accumulation of gas in the storage tank is overcome.

Various additional objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings, illustrating an operative embodiment.

In said drawings:—

Figure 1 is a view primarily in elevation and in diagram showing my improvement;

Figure 2 is an enlarged vertical sectional view through the condenser, and

Figure 3 is an enlarged vertical sectional view through the vacuum valve, taken on the line 3—3 of Figure 1.

Referring specifically to the drawings, 10 designates a storage tank for gasoline or other volatile fuel which is usually disposed below the surface of the ground 11. The fuel is supplied to the storage tank 10 through a pipe 12 and is withdrawn from the storage tank 10 through a pipe 13, usually through the medium of a pump.

The gases necessarily arising from the fuel in the tank 10 escape through a pipe 14, which in ordinary practice is a vent and runs to the atmosphere. However, in accordance with my invention, pipe 14 is continued and leads into a condenser tank 15. Within condenser tank 15, the pipe 14 is connected to a trap 15' and from the latter an S-shaped pipe 16 leads, having its discharge end at 17 and thus below a line or level 18, up to which the tank 15 is adapted to be filled with a water solution of calcium chloride having a freezing point of 70 degrees below zero.

The pipe 14 has a vacuum valve 19 connected therein. Such valve embodies an attaching plug 20 which is screwed into the pipe 14, a hood 21, perforated as at 22, being screw-threaded at 23 onto the plug 20. As best shown in Figure 3, a valve 24 normally closes the plug 20 through the medium of an expansive coil spring 25 surrounding a stem 26 on the valve and abutting a disk 27 at one end, and a nut 26' on the stem at the other end. The disk 27 is in the nature of a spider and rests on a shoulder 28 within the plug 20.

The condensed or reclaimed gasoline or other fuel may be withdrawn from the tank 15 when desired, through a valve connection at 29. A vent pipe 30 extends from the top of the tank 15.

It will be realized that the vacuum valve 19 is arranged at the highest point in the system and that the tank 15 may be located below the surface of the ground as within a pit 31.

Normally the valve member 24 is closed. The gases arising in the tank 10 pass therefrom through the pipe 14, trap 15', pipe 16 and are liberated at 17 in the calcium chloride solution within the tank 2. This creates a back pressure which condenses fumes and prevents them from escaping from the storage tank. Any pressure which accumulates at any time in the tank 15 will be released through the vent 30.

Said vacuum valve 24 will open on one-quarter pound back suction which will give the storage tank 10 a chance to obtain air and also prevent any possible chance of the tank to suck the calcium chloride from the tank 15. The vacuum valve 24 of course will open when the attendant operates a pump to obtain the gasoline or fuel through the pipe 13. When the tank 10 has enough air, the said valve 24 will close preventing the gases from escaping.

When a battery of tanks 10 are connected together, it will be realized that each pipe 14 thereof will have its individual vacuum valve means 19 although all may be connected to a single trap 15' or a single condenser 15.

I find in use that the invention saves practically all of the gasoline fumes which are now lost and it avoids the danger of gas being blown out of open vents of the storage tank or causing explosions within the storage tank.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

What I claim is:—

1. In combination with a fuel storage tank and a pipe through which vapor passes therefrom, a valve in said pipe to open through the action of the vacuum therein, a tank to which said pipe leads, a solution of calcium chloride in the last mentioned tank into which gases are liberated to create a back pressure to condense fumes to prevent their escape from the storage tank.

2. In combination with a fuel storage tank and a pipe through which vapor passes therefrom, a valve in said pipe to open through the action of

the vacuum therein, a tank to which said pipe leads, a calcium chloride solution having a freezing point of seventy degrees below zero in the last mentioned tank into which gases are liberated to create a back pressure to condense fumes to prevent their escape from the storage tank, and a vent leading from the second mentioned tank.

3. In combination with a fuel storage tank and a pipe through which vapor passes therefrom, a valve in said pipe to open through the action of the vacuum therein, a tank to which said pipe leads, a solution of calcium chloride in the last mentioned tank into which gases are liberated to create a back pressure to condense fumes to prevent their escape from the storage tank, and a vent leading from the second mentioned tank, said valve being adapted to open upon substantially one-fourth pound suction.

4. A device of the class described having a tank adapted to contain a solution of calcium chloride, a pipe extending into the tank arranged to discharge below the level of the calcium chloride solution, a vent leading from the tank, and a pipe leading from the tank adapted for connection with the vent of a fuel tank, and a vacuum valve in said last mentioned pipe.

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