Oct. 8, 1940. L. J. WHITE 2,217,581

LIQUEFIED GAS DISPENSING SYSTEM

Filed Sept. 7, 1938

Fig. 1

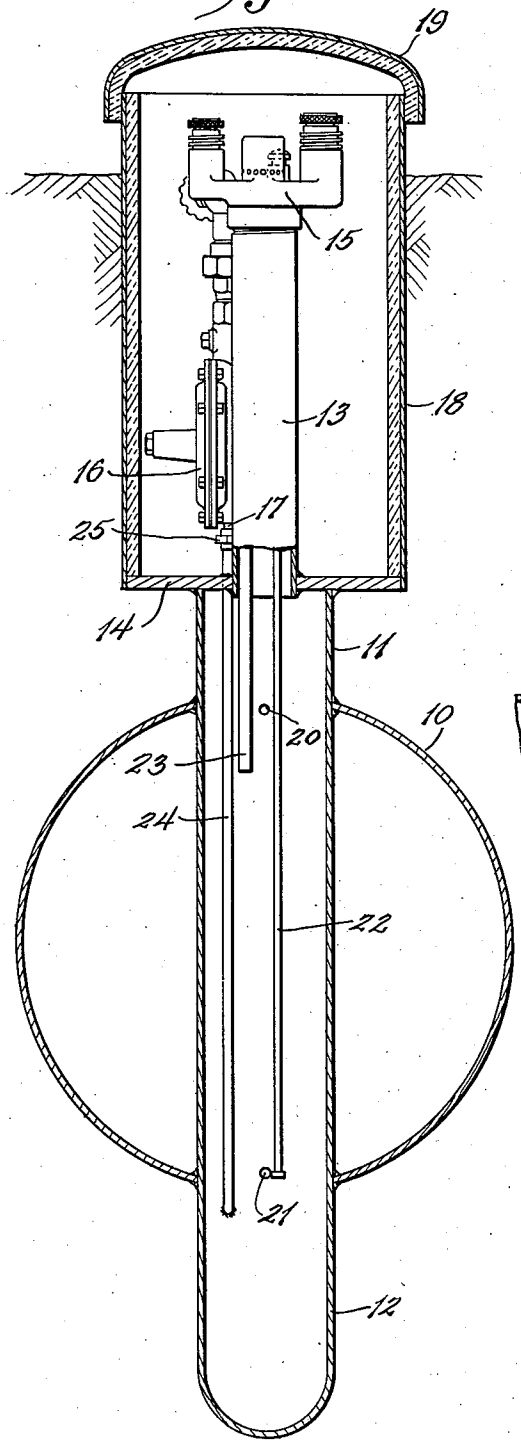
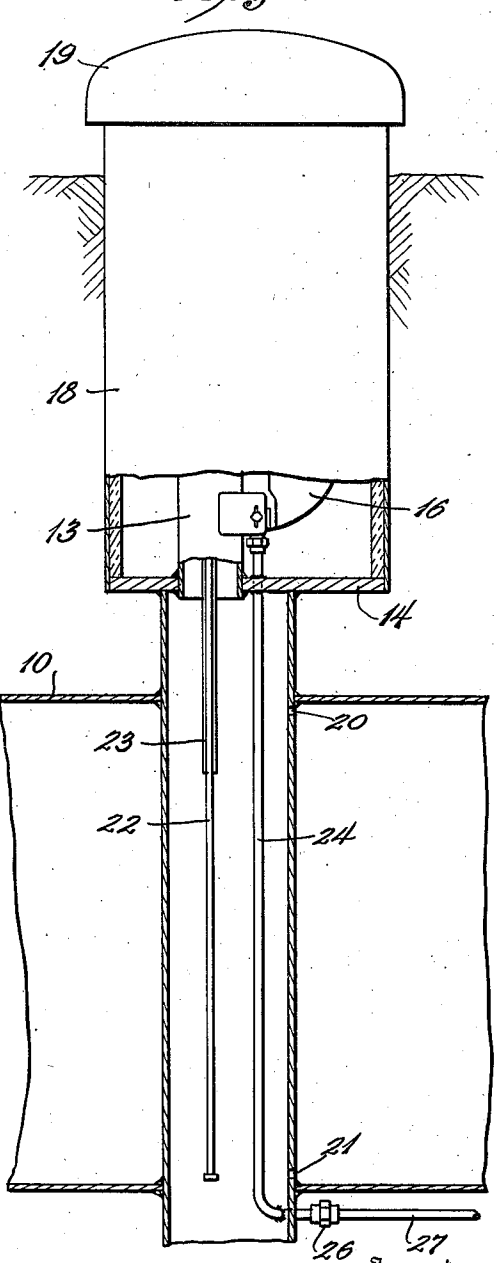


Fig. 2



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Patented Oct. 8, 1940

2,217,581

UNITED STATES PATENT OFFICE

2,217,581

LIQUEFIED GAS DISPENSING SYSTEM

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Application September 7, 1938, Serial No. 228,824

5 Claims. (Cl. 62—1)

This invention relates to liquefied gas systems of the type shown in my co-pending application Serial No. 228,823, filed on even date herewith, and aims, among other objects, to provide a greatly improved system wherein a portion of the service pipe extends through a riser or standpipe to a point below the bottom of the tank so that it will absorb revaporizing heat, not only from the vapor and liquefied gas in the standpipe, but also from the surrounding earth far below the frost line.

Other aims and advantages of the invention will appear in the specification, when considered in connection with the accompanying drawing, wherein;

Figure 1 is a vertical sectional view, partly in elevation, of a system embodying the invention; and,

Figure 2 is a fragmentary vertical sectional view, partly in elevation, taken at right angles to the section in Fig. 1.

Referring particularly to the drawing, the system there shown is of the same type as that disclosed in my aforesaid co-pending application. It embodies a storage tank 10, an enlarged lower standpipe section 11 having a projecting lower end providing a heat exchanger 12 and a standpipe section 13 connected by a welded-on plate 14 to the lower section from which gas is delivered through the well known combination fitting 15 and pressure reducing regulator 16 having a service outlet nipple 17. The appurtenances are arranged within an insulated casing 18 secured to the plate 14 and having an insulated cover 19. The enlarged standpipe section 11 is shown as having spaced openings 20 and 21 which communicate with the contents of the tank at the top and bottom so that the liquid in the tank will establish its level in the pipe. As shown in the aforesaid copending application, the usual slip-tube 22 and dip-tube 23 projecting through the standpipe into the standpipe within the tank.

Instead of leading the gas service pipe out of the protecting casing above the level of the tank as in the aforesaid application, it is shown in this instance as having a run 24 extending through the cover plate 14 and the side wall of the lower extension 12, being conveniently welded at both points to prevent any possibility of leakage. This run is shown as having union coupling fittings 25 and 26 to facilitate connection to the service outlet 17 and the usual service pipe 27. It will be understood that the run 24 is welded-in at the factory. The service pipe 27 extends substantially horizontally below the level of the tank and may rise above its level but below the frost line where it extends into a building. The lowest portion of the service pipe is always preferably at or about the point of its connection to the heat exchanger extension 12 so that any condensate formed therein will always flow back toward this point and be revaporized.

From the foregoing description it will be seen that the improved system is very simple in its construction and easy to manufacture. The tank and the standpipe connections, together with the casing, may be assembled at the factory and the dispensing appurtenances connected at the point of installation or the whole system can be preassembled and shipped without danger of breakage. The service pipe will always absorb heat from the vapor and liquid in the standpipe section 11 when the gas is being used. Therefore, no condensate can form in the service pipe before it passes out of the heat exchanger extension of the standpipe. Moreover, this type of system avoids any necessity of providing any type of heat exchanger for the service pipe to insure revaporization of condensate. It is contemplated that such systems will be most useful in cold climates and the cost of installation will be greatly reduced.

Obviously, the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since they may be employed advantageously in various combinations and sub-combinations.

What is claimed is:

1. In a liquefied gas dispensing system of the character described, a pressure storage tank for the liquefied gas adapted to be buried in the ground; a standpipe connected to and communicating with the tank for delivering vaporized gas; a heat exchanger extension on the standpipe projecting through the bottom of the tank and arranged to absorb supplemental heat from the earth below the tank; and a service pipe extending through a portion of the standpipe and emerging therefrom below the bottom of the tank to absorb heat from the contents of the tank and from the surrounding earth to revaporize any condensate formed in the service pipe.

2. In a liquefied gas dispensing system of the character described, a pressure storage tank for the liquefied gas adapted to be buried in the ground; a standpipe connected to and extending above and below the tank and communicating therewith; dispensing appurtenances including a

pressure reducing regulator connected to the upper portion of the standpipe; and a service pipe connected to the pressure reducing regulator and extending downwardly therethrough and outwardly therefrom below the tank.

3. In a liquefied gas dispensing system of the character described, a pressure storage tank for the liquefied gas adapted to be buried in the ground; a standpipe connected to and extending above and below the tank; said standpipe having openings therein communicating with the interior of the tank near the top and bottom thereof to permit liquid in the tank to establish its level in the standpipe; dispensing appurtenances including a pressure reducing regulator connected to the upper portion of the standpipe; and a service pipe connected to the pressure reducing regulator and extending downwardly therethrough and outwardly therefrom below the tank.

4. In a liquefied gas dispensing system of the character described, a pressure storage tank for the liquefied gas adapted to be buried in the ground; a standpipe connected to and extending above and below the tank and communicating with the tank near the top and bottom thereof; dispensing appurtenances including a pressure reducing regulator connected to the upper portion of the standpipe; a service pipe connected to the pressure reducing regulator and extending downwardly therethrough and outwardly therefrom below the tank; and an insulated protecting casing surrounding the appurtenances and supported by the standpipe.

5. In a liquefied gas dispensing system of the character described, a pressure storage tank for the liquefied gas adapted to be buried in the ground; a standpipe having an enlarged lower section projecting through the top and bottom of the tank and communicating therewith; a reduced upper standpipe section on the upper end of the lower section; dispensing appurtenances, including a pressure reducing regulator connected to the upper standpipe section; and a service pipe having a portion extending through the lower standpipe section and emerging at its lowest point from said section below the tank to absorb revaporizing heat for any condensate therein from the standpipe and the surrounding earth.

LOYD J. WHITE.