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COMBINATION FITTING FOR GAS DISPENSING SYSTEMS

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Fig. 1

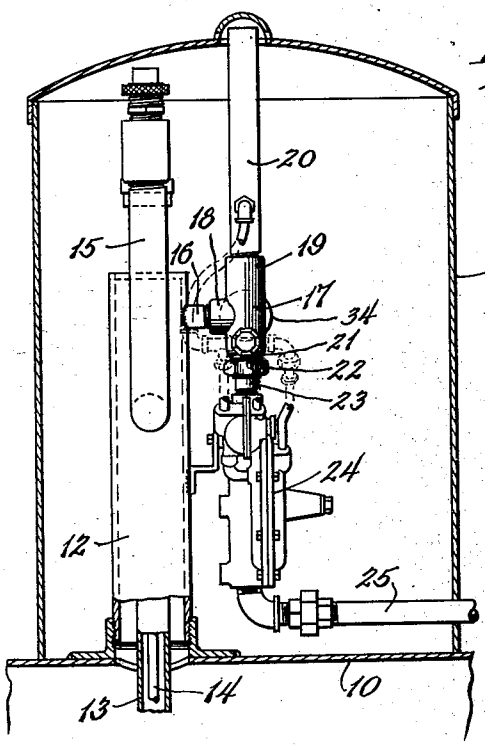
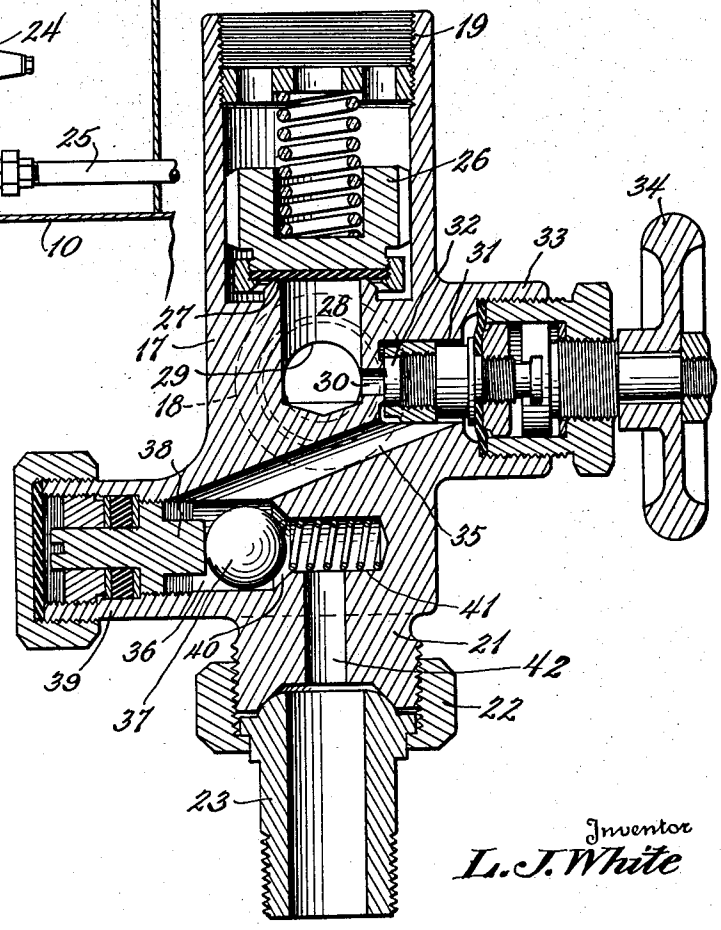


Fig. 2



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COMBINATION FITTING FOR GAS DISPENSING SYSTEMS

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5 Claims. (Cl. 137—78)

This invention relates to liquefied gas dispensing apparatus and, among other objects, aims to provide important improvements in the gas fittings primarily designed for use as a part of the dispensing and controlling equipment in a liquefied petroleum gas system wherein a high pressure storage tank is employed. More particularly, the invention provides a novel combination valve fitting and service T to be connected directly to a dispensing conduit or nipple leading from a tank to a pressure regulator and constituting a part of the equipment which is usually arranged in a protecting casing or housing on the tank and partially buried in the ground. The main idea is to provide a relatively simple, compact, inexpensive and light weight combination valve unit and service T which can be installed very easily and quickly in a dispensing system and which minimizes leaks by eliminating a number of joints.

This application involves improvements in the dispensing equipment disclosed in my copending application, Ser. No. 98,048 filed August 26, 1936.

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

Fig. 1 is a side elevation, partly in section, showing the improved fitting applied to a liquefied petroleum gas dispensing system; and

Fig. 2 is a vertical sectional view taken through the fitting shown in Fig. 1 and drawn on an enlarged scale.

Referring particularly to the drawing, the improved fitting is shown as being applied to the dispensing equipment connected to a storage tank 10 and is arranged in a protecting casing 11, the storage tank and casing being adapted to be buried in the ground. The tank is shown as having a standpipe 12 within which is arranged a dip tube 13 projecting into the tank to the desired liquid level and, within the tube, there is arranged a slip tube gauge 14. Near the upper end of the standpipe there is shown a valved filling tube 15 which is identical with that shown in the aforesaid copending application. Also, a nipple or pipe 16 is shown as being welded to the upper end portion of the standpipe for delivering gas from the tank. All of said apparatus is like that shown in said copending application.

In this example, the improved combination fitting in the form of an enlarged T having a unitary casing 17 connected to the nipple 16 by means of an inlet branch 18. It has a vertical vent branch 19 connected to a vent pipe 20 and a lower dispensing branch 21 having a coupling 22 and nipple 23 which is adapted to be connected to the pressure regulator 24. The low pressure side of the pressure regulator 24 is connected to the service main 25.

Referring again to the fitting, it is shown as having a spring loaded, safety relief valve 26 in the vent branch 19 normally seated on a seat 27 and a conduit 28 leads upwardly from an inlet conduit 29 in the branch 18. The arrangement is such that excess pressure in the tank will cause the relief valve to open and the high pressure gas will be discharged through the vent pipe 20. The fitting also has a conduit 30 leading to a valve chamber 31 which carries a cut-off valve 32 arranged in a hollow boss 33 and having a hand wheel 34 so that the gas may be cut off by hand when the dispensing system is not to be used. However, the arrangement is such that the safety relief valve will still function to prevent excess pressure from developing in the storage tank. The gas passes through the valve chamber into a cored conduit 35 which communicates with a chamber 36 carrying an adjustable excess flow check valve having a spring urged ball 37 normally held open against an adjustable stop 38 carried in a hollow boss 39. It is contemplated that this check valve may be used as a service cut-off valve. From the chamber 36 the gas passes between the ball and its seat 40 through the spring chamber 41 into a vertical cored conduit 42 communicating with the nipple 23. Thence, the gas is delivered through the usual high pressure regulator and passes out from the low pressure side thereof through the service main 25.

The particular construction and details of the safety relief valve, the cut-off valve and the excess flow check valve are not claimed herein. They may be, and preferably are, of well known types. One of the very important features of the present invention resides in the fact that the combination fitting provides a service T which can be connected directly to the dispensing nipple and all of the valves are arranged in it so that several joints in the service line which are apt to leak are eliminated. Furthermore, the arrangement is such that the single unit may be very quickly applied to a system and thereby save considerable time in the assembly. Moreover, it weighs much less than a series of separate fittings and avoids difficulties caused by mis-alinement of such fittings. In fact, the combination unit may be applied to the dispensing nipple and the nipple 23 of the union coupling

screwed into the high pressure side of the pressure regulator casing; then these two parts may easily be assembled within the casing 11 or removed from the casing in case of repairs. Thus, all of the dispensing equipment may be quickly removed for repairs and replacement. Obviously, the combination fitting may be manufactured very cheaply because it is embodied in a single cored and drilled casting or casing.

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 petroleum gas dispensing system having a gas conduit communicating with a storage tank, a combination valve fitting and service T having one branch connected to said conduit; a vent branch carrying a safety relief valve discharging to the atmosphere; and a service branch carrying an excess flow check valve.

2. In a liquefied petroleum gas dispensing system having a gas conduit communicating with a storage tank, a unitary T-shaped fitting having one branch connected to said conduit; a safety relief valve in another branch of said fitting discharging to the atmosphere; and, a cut-off valve and an excess flow check valve in the remaining branch of said fitting.

3. In a liquefied petroleum gas dispensing system having a gas conduit communicating with a storage tank, a combination valve fitting and service T having one branch connected to said conduit; a vent branch carrying a safety relief valve; a service branch carrying an adjustable excess flow check valve; and means for connecting said service branch to a pressure regulator.

4. In a liquefied petroleum gas dispensing system having a standpipe connected to a storage tank and a lateral service nipple on the standpipe; a combination fitting in the form of a service T comprising a horizontal branch connected to said lateral nipple; an upper vertical vent branch carrying a safety relief valve; a lower vertical service branch carrying an excess flow check valve; and means for connecting said lower branch to a pressure regulator.

5. As an article of manufacture, a combination valve fitting for liquefied petroleum gas dispensing systems and the like, comprising a unitary T-shaped casing having a gas inlet branch to be connected to a gas delivering conduit; a vent branch carrying a safety relief valve; an outlet branch carrying an excess flow check valve; and a manually operable cut-off valve in the casing between the vent branch and said excess flow check valve.

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