INTERCHANGEABLE BASE UNITS FOR GAS APPLIANCES

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INTERCHANGEABLE BASE UNITS FOR GAS APPLIANCES

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Filed June 8, 1959. Ser. No. 818,708
2 Claims. (Cl. 158—26)

This invention relates generally to gas appliances and more particularly to an improved interchangeable base unit which can be selectively used to interconnect a source of gas fuel such as a standard liquefied petroleum tank and plural gas appliances having different fields of utility.

The development of liquefied petroleum fuel-type appliances has made it possible to obtain and use different types of gas appliances intended for use in different fields of utility. For example, a lantern may be provided for illuminating purposes in trailers, cottages, for camping purposes, or for emergency or disaster use. Another popular appliance adapted for use with a liquefied petroleum fuel is a portable stove which is capable of cooking foods as efficiently as domestic stoves within the comforts of a permanent home. It is further possible to obtain and use a heater attachment for a liquefied petroleum-type appliance which is adapted to supply thermal energy for space heating in a trailer, a small cottage, a duck blind, or rooms of a house under construction. Such appliances as referred to herein are merely examples of the many different types of liquefied petroleum-type appliances presently available for use and enjoyment. Most of such appliances are specifically adapted to be supplied with a liquefied petroleum-type fuel from a small throw-away container of propane. Such small containers burn for a limited amount of time, require special adapters for integrating the throw-away tank with the appliance and add to the general bulkiness and weight of the appliance which are specifically intended to be portable in character.

In accordance with the principles of the present invention, there is provided an interchangeable base unit which can be selectively used to interconnect a standard liquefied petroleum tank of the refillable-type with plural gas appliances adapted for use in different fields of utility. The appliance can be conveniently located in a remote location from the tank by the use of an extra long hose. It is an object of the present invention, therefore, to provide an improved interchangeable base unit for use with gas appliances.

Yet another object of the present invention is to provide an interchangeable base unit having safety features whereby the base unit can be used to interconnect a source of gaseous fuel with a selected one of plural gas appliances.

A further object of the present invention is to provide a construction wherein a plurality of gas appliances may be connected to a single source of fuel.

Many other advantages and additional objects will become evident to those versed in the art upon making reference to the detailed description which follows and the accompanying sheets of drawings in which preferred structural embodiments of gas appliances incorporating the principles of the present invention are shown by way of illustrative example.

On the drawings:

FIGURE 1 is a perspective view of a plurality of appliances incorporating the principles of the present invention and connected to a standard liquefied petroleum tank;

FIGURE 2 is an enlarged side elevational view partly in cross-section showing details of the coupling connection provided in accordance with the principles of the present invention;

FIGURE 3 is a bottom plan view of a base unit provided in accordance with the principles of the present invention;

FIGURE 4 is a cross-sectional view taken generally on line IV—IV of FIGURE 3; and

FIGURE 5 is an enlarged cross-sectional view with parts broken away and with parts shown in elevation taken generally on line V—V of FIGURE 3.

As shown on the drawings:

Although the principles of the present invention are of general applicability, a representative embodiment is described in connection with plural gas appliances shown in FIGURE 1 as being connected to a common source of liquefied petroleum fuel for simultaneous operation. Thus, there is provided a lantern indicated generally by the reference character L which is particularly suited for providing illumination in trailers, cottages, for camping purposes, or for emergency or disaster use. There is further provided a stove indicated generally at S having a griddle adapted to accommodate any size of skillet and adapted to afford a portable stove unit having the ability to cook and prepare foods in the same manner as a permanent installation intended for domestic use.

A heating attachment indicated at H, when placed on top of the stove S converts the stove into a space heater suitable for heating rooms of a trailer or cottage, or a duck blind, or any other space in which a portable space heating appliance may be utilized.

In order to supply the plural appliances with fuel, there is shown in FIGURE 1 a standard liquefied petroleum tank indicated generally at 10. The tank 10 comprises a so-called 20 pound tank which can be refilled with a liquefied petroleum fuel such as propane and such tank will supply fuel over a considerable period of time, much longer than would a small throw-away size tank of propane oftentimes used in connection with lanterns of the type shown at L or stoves of the type shown at S.

The tank 10 comprises a base ring 10a which underlies a main body portion 10b. A valve stem shown at 10c controls the outward flow of pressurized fuel through an outlet 11. As shown in FIGURE 1, it is contemplated by the present invention to connect to the outlet 11 a Y-shaped adapter fitting 24 having a common inlet nipple 24a coupled to the outlet 11 and including separate legs 24b and 24c adapted to divide the gaseous fuel discharged through the outlet 11 into two separate streams. Each leg 24b and 24c is provided with suitable coupling means as shown at 24d and at 24e, respectively. In the present form of the invention, the legs 24b is shown connected as at 24d to an elongated conduit made of flexible material such as a hose 22 leading to the stove S and the leg 24c is shown coupled as at 24e to a hose 20 leading to the lantern L.

Should it be desired to connect only a single gas appliance to the tank 10, it will be understood that the dual conduit 24 can be readily removed from the outlet 11 whereupon the coupling connection 24e or 24d of either hose 20 or 22 can be directly connected to the outlet 11 of the tank 10.

As shown in the drawings, each of the appliances L, S and H are characterized by an interchangeable form of base construction including a main body portion 26 having a depending support flange shown at 28. In the particular form of the invention illustrated, the body portion 26 is shown of generally circular configuration and the support flange 28 is shown as being annular in configuration, however, it will be understood that other geometric configurations can be advantageously used without departing from the spirit of the present invention.

The flange 28 is apertured as at 30 to pass a conduit 32 extending generally parallel to the body portion 26. The outer end of the conduit 32 is particularly characterized by the formation thereon of a threaded adapter 34 by
means of which the conduit may be connected to a coupling member such as a coupling member 20L shown on the end of the hose 20, or to a coupling member 22 shown on the end of the hose 22 (FIGURE 1).

At the inner end of the conduit 32 there is provided an elbow member 36 to which is connected a valve member indicated generally at 38 and which is adapted to extend through and to be supported by the edges of a centrally disposed aperture 40 formed in the body section 26 of the base member.

As shown in FIGURE 5, the elbow member 36 is internally threaded as at 36a thereby to receive in threaded relationship a correspondingly threaded neck shown at 38a formed on the valve member 38.

The valve member 36b is mounted on the valve stem 42 and includes a piloting portion which extends through the aperture 40 whereinon the nut may be threaded against the under portion of the base member 26. A lock washer 44 is shown interposed between a shoulder 46 formed on the valve member 38 at the end of the annular shoulder 48b and the edges of the base member 26 around the aperture 40 thereby to lock the valve member 38 in firm assembly with the base member.

The valve body 38 is particularly characterized by the formation thereon of an enlarged intermediate shoulder 38a which is peripherally threaded as at 38c thereby to receive in threaded relationship therewith a suitable fastener such as a nut 42.

The enlarged annular boss 38b formed on the valve stem 42 is a piloting portion which extends through the aperture 40 whereupon the nut may be threaded against the under portion of the base member 26. A lock washer 44 is shown interposed between a shoulder 46 formed on the valve member 38 at the end of the annular shoulder 48b and the edges of the base member 26 around the aperture 40 thereby to lock the valve member 38 in firm assembly with the base member.

The valve body 38 is particularly characterized by the formation thereof as shown in FIGURE 47 extending axially to the bottom. The flow passage 47 has a partially threaded portion formed as at 47a thereby to receive in threaded adjusted assembly a normally closed tire valve indicated generally as 48. The tire valve 48 includes a threaded body portion 48a which is assembled within the threaded portion 47a of the flow passage 47 and further includes a seat forming portion 50 through which extends a movable plunger 52 having on the end thereof a terminal member 52a containing a coil spring 52b, the other end of the coil spring 52b engaging against a valve head 52c for seating and closing against the seat forming portion 50 of the valve 48.

The flow passage 47 is counterbored as at 47b thereby to receive and seat an O-ring sealing member 54. A retainer member 58 is pressed in firm assembly within the counterbore 47b to axially position the O-ring sealing member 54 in fixed relation.

At the upper end of the valve 38 as shown in FIGURE 5, there is provided an enlarged coupling portion 38d threaded as at 38e to effect a threaded coupling connection with the control valve unit of a suitable gas appliance.

Since the tire valve 48 is normally closed, it will be appreciated that the base unit thus formed can be coupled directly to the fuel source such as the tank 10 and no fuel will escape since the spring 52b normally biases the valve head 52c in seating relationship with the valve seat 50.

In accordance with the principles of the present invention, each portable gas appliance is provided with a control valve assembly indicated generally at 60 and shown in detail in FIGURE 2. It will be understood that the control valve assembly includes a body portion having a through passage from therein regulated by a flow control valve shown generally at 64. The valve assembly 60 also includes an enlarged internally threaded boss portion at the lower end as shown in FIGURE 2 and which boss portion is shown at 66 which is adapted to be threaded onto the threads 38c of the coupling portion 38d on the body of the valve 38.

At the lower end of the control valve assembly, there is provided a so-called push pin or elongated stem indicated generally at 62. The push pin or elongated stem 62 may preferably comprise a flow regulator through which a supply of fuel is admitted from the tank 10 to the flow passage extending through the valve assembly 60 and regulated by the control valve 64, however, the end of the push pin 62 also serves to actuatingly engage the movable part 52 of the tire valve 48. Thus, as shown in FIGURE 5, for example, when the push pin 62 enters the flow passage 47 the peripheral side walls thereof are sealingly engaged by the O-ring sealing member 54 and the end of the push pin 62 engages against the actuating portion of the movable valve member 52, whereupon the valve 48 will be opened and fuel under pressure will flow through the intercommunicating base unit valve 48, the elbow 36 and the valve 38 into the elongated stem 62 and through the valve assembly 60.

Extending upwardly from the valve means 48 is a conduit member 68 forming an air collar by means of which combustion-supporting air is mixed with the fuel flowing through the flow passage. As shown specifically in FIGURE 2, the conduit member 68 is threaded as at 68a and is provided with an annular row of circumferentially spaced radially extending openings 72. An air collar 70 engages with the threads 68a and may be axially adjusted upon relatively screw-threading the air collar 70 on the conduit member 68 to adjust the relative opening of the apertures 72 thereby to admit an adjusted quantity of air into the flow passage shown at 68b in FIGURE 2.

There is thus formed a stream of air-fuel mixture which is discharged from the conduit member 68 into an adapter fliting 76 provided for the lantern L. A conduit 74 is connected to the adapter 76 and extends upwardly within a hood construction for the lantern L shown generally at 12 and more specifically including a globe frame 80 containing a transparent globe 80a. The conduit 74 is formed with a hose neck to which is attached a mantle shown at 78. The globe frame 80 carries a hood means 78 at the top thereof and the lantern may be transported by a swinging bail indicated at 84.

As applied to the stove S, the valve assembly 60 is remotely provided with a connecting nut on the threaded end of the conduit member 68 which abuts against the lower side of a griddle shown generally at 14. A bottom plate 85 is connected to the conduit member 68 on the upper side of the griddle 14 and forms the bottom plate of a burner unit having a serrated plate at 86 at which the fuel is burned to provide a circumferentially extending ring of flame. The griddle includes a pattern of cross bars 88 adapted to accommodate any size of skillet and the griddle is further provided with a support frame including depending legs 14a and 14b connected by a cross bar 14c.

If the appliance is to take the form of the space heater H, an annular baffle indicated generally at 20 is provided with circumferentially spaced spring clips 93 fastened to the lower edge of side walls 94, which spring clips 93 removably engage the edges of the griddle 14. The hood of the heater H is internally baffled, thereby to direct thermal energy outwardly through apertures 96 formed in the side walls 94 and through a slot 98 shown formed at the top of the side wall 94 subjacent a top bracket shown at 100.

We have thus provided an improved form of inter-changeable base unit for gas appliances, which base unit can be selectively used to interconnect a source of gas fuel and gas appliances intended for use in different fields of utility.

Although various minor modifications might be suggested by those versed in the art, it should be understood that we wish to embody within the scope of the patent warranted herein all such modifications as reasonably and properly come within the scope of our contribution to the art.

We claim as our invention:

1. A portable light and heat set for use with liquefied petroleum fuel comprising,
   a. a base plate including
      a centrally apertured sheet form member extending horizontally to form a top wall and having
      a depending peripheral flange forming a side

2. A portable light and heat set for use with liquefied petroleum fuel comprising,
   a. a base plate including
      a centrally apertured sheet form member extending horizontally to form a top wall and having
      a depending peripheral flange forming a side

3. A portable light and heat set for use with liquefied petroleum fuel comprising,
   a. a base plate including
      a centrally apertured sheet form member extending horizontally to form a top wall and having
      a depending peripheral flange forming a side
wall terminating in a lowermost horizontal support edge,

a conduit member extending generally horizontally through said flange above said horizontal support edge and underlying said sheet form member in concealed relation with respect thereto,

one end of said conduit member outside of said flange having coupling means thereon to connect said conduit member to a source of fuel,

an elbow on the other end of said conduit member lying in register with the central aperture in said sheet form member,

a safety valve mounted in said sheet form member at the centrally apertured portion thereof, and being connected to said elbow,

said safety valve having a normally closed spring-biased valve,

and including an actuator stem extending upwardly with respect to said base plate,

safety valve having an enlarged boss overlying said sheet form member and forming coupling means, and alternatively selective gas appliances for connection to said coupling means and supportable by said base plate including a mantle type lantern for burning fuel for illumination,

and a burner unit to burn fuel for heating purposes as a griddle, or when combined with an upstanding baffle housing mountable thereon, to diffuse the thermal energy for space heating,

said lantern and said burner unit each having a control valve assembly including a coupling portion for engagement with said coupling means and further including a push-pin to actuatingly engage said actuator stem of said safety valve, thereby to admit liquified petroleum fuel from the base plate into the appliance and selectively carried thereby.

2. A pair of the portable light and heat sets for use with liquified petroleum fuel as singly defined in claim 1 in combination with a liquified petroleum fuel tank having a valve control outlet,
a Y-shaped adapter fitting in said outlet having an inlet portion connected to said outlet and having two separate legs through which fuel is discharged in separate streams,
and a hose connected to each leg for carrying said streams of fuel to a location remote from said fuel tank and for connection to and simultaneous operation of said pair of light and heat sets.

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