July 14, 1964 M. LAGREID ETAL 3,140,740

INTERCHANGEABLE BASE UNITS FOR GAS APPLIANCES

Filed June 8, 1959 2 Sheets-Sheet 1

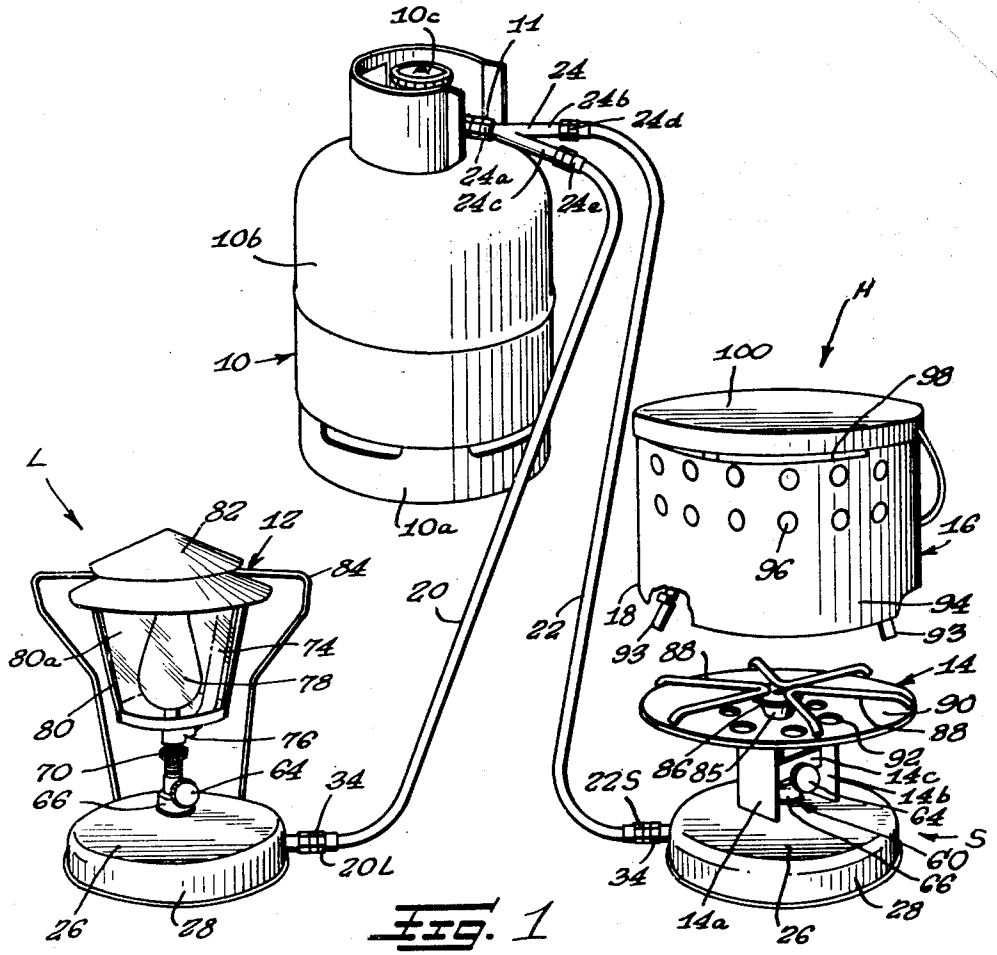


Fig. 1

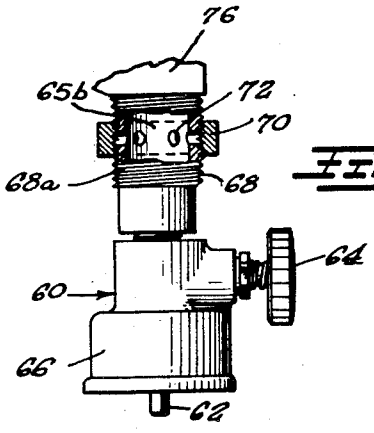


Fig. 2

Inventors
Magnus Lagreid
William L. Lindgren
By Hill, Sherman, Meroni, Gross & Simpson Attys

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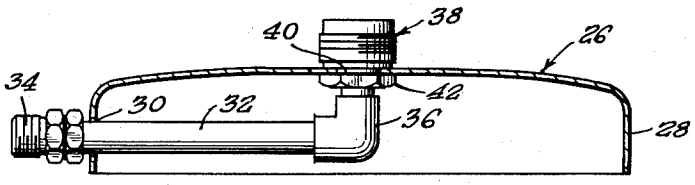


Fig. 4

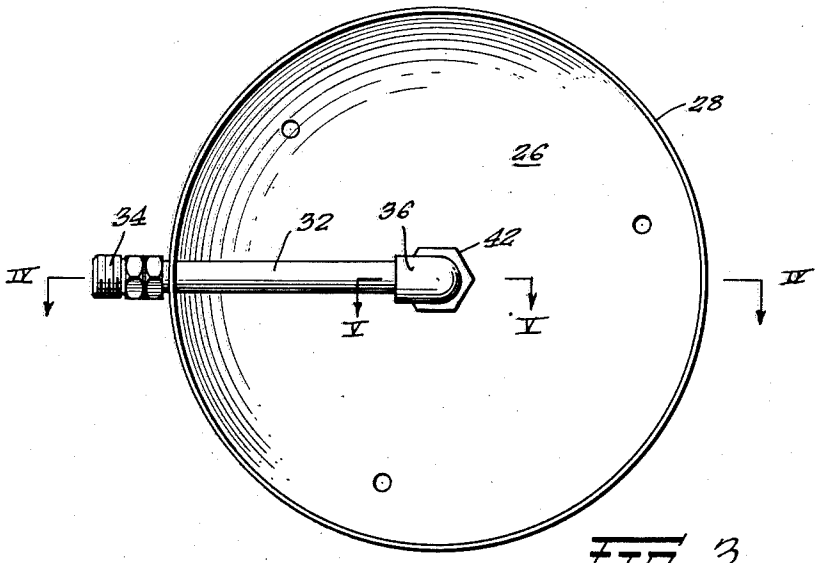


Fig. 3

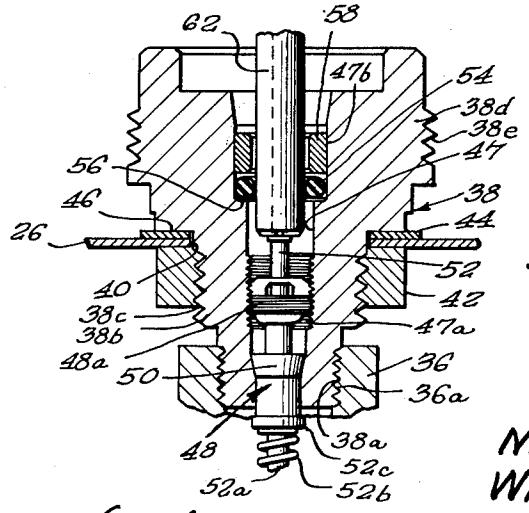


Fig. 5

Inventors
Magnus Lagreid
William L. Lindgren

By Hill, Sherman, Meroni, Gross & Simpson Attys

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3,140,740 INTERCHANGEABLE BASE UNITS FOR GAS APPLIANCES

Magnus Lagreid and William L. Lindgren, Sycamore, Ill., assignors to Turner Corporation, Sycamore, Ill., a corporation of Illinois

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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 construction may be provided intended for supplying illumination for trailer, cottage, cmaping, 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 exemplary 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 appliances 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 **10***a* which underlies a main body portion **10***b*. A tank valve shown at **10***c* 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 **24***a* coupled to the outlet **11** and including separate legs **24***b* and **24***c* adapted to divide the gaseous fuel discharged through the outlet **11** into two separate streams. Each leg **24***b* and **24***c* is provided with suitable coupling means as shown at **24***d* and at **24***e*, respectively. In the present form of the invention, the leg **24***b* is shown connected as at **24***d* to an elongated conduit made of flexible material such as a hose **22** leading to the stove S and the leg **24***c* is shown coupled as at **24***e* 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 adapter **24** can be readily removed from the outlet **11** whereupon the coupling connection **24***e* or **24***d* 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 **20**L shown on the end of the hose **20**, or to a coupling member **22***s* 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 **36***a* thereby to receive in threaded relationship a correspondingly threaded neck shown at **38***a* formed on the valve member **38**.

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

The enlarged annular boss **38***b* formed on the valve member **38** forms 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 **38***b* and the edges of the base member **26** at 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 therein of a flow passage **47** extending axially therethrough. The flow passage **47** has a partially threaded portion formed at **47***a*, thereby to receive in threaded adjusted assembly a normally closed tire valve indicated generally at **48**. The tire valve **48** includes a threaded body portion **48***a* which is assembled within the threaded portion **47***a* 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 **52***a* bottoming a coil spring **52***b*, the other end of the coil spring **52***b* engages against a valve head **52***c* for seating and closing against the seat forming portion **50** of the valve **48**.

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

On the upper end of the valve **38**, as shown in FIGURE 5, there is provided an enlarged coupling portion **38***d* threaded as at **38***e* 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 interchangeable base unit thus far described can be coupled directly to the fuel source such as the tank **10** and no fuel will escape since the spring **52***b* normally biases the valve head **52***c* 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 fromed 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 **38***e* of the coupling portion **38***d* 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 interchangeable base unit via the conduit **32**, 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 **68***a* and is provided with an annular row of circumferentially spaced radially extending openings **72**. An air collar **70** engages with the threads **68***a* 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 **68***b* in FIGURE 2. There is thus formed a stream of air-fuel mixture which is discharged from the conduit member **68** into an adapter fitting **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 **80***a*. The conduit **74** is formed with a goose-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 merely 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 **14***a* and **14***b* connected by a cross bar **14***c*.

If the appliance is to take the form of the space heater H, an annular baffle indicated generally at **16** 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 interchangeable 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 hereon 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 liquified petroleum fuel comprising,

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,

said 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 feul 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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