

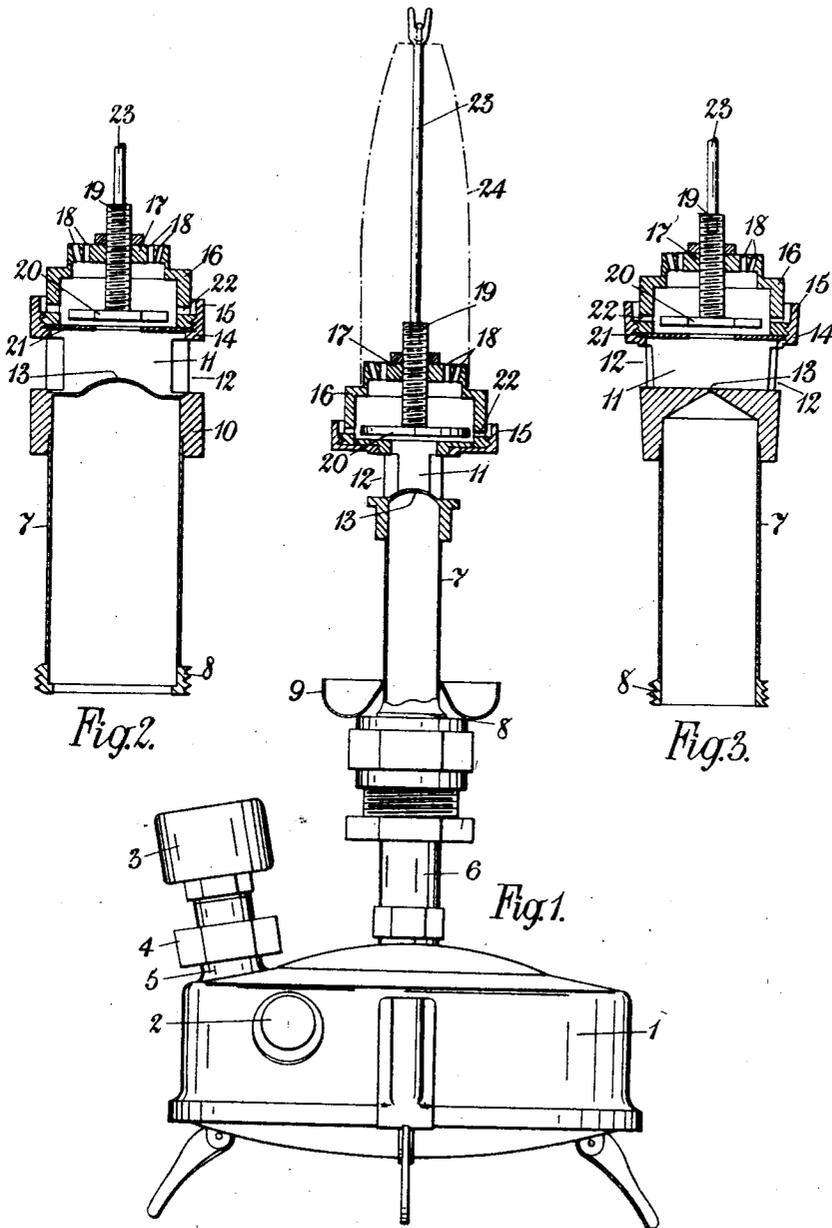
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BURNER FOR GASEOUS AND LIQUID FUELS

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BURNER FOR GASEOUS AND LIQUID FUELS.

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This invention relates to burners for gaseous and liquid fuels and liquid fuel vaporizers and particularly to the type of liquid fuel burner employed in wickless stoves or lamps in which the fuel is vaporized or atomized and is burnt in admixture with air forming a flame of the Bunsen character.

A burner in accordance with the invention may comprise a chamber located in advance of the orifice, nozzle or nipple through which the liquid fuel is ejected, said chamber having an opening through which the fuel admixed with air may enter the chamber, a baffle associated with said opening and extending to a zone adjacent to the side walls of the chamber, and, adjacent to the base of the chamber, slots or holes through which a portion of the mixture of fuel and air will be caused to pass, and thereby heat the chamber and base to a temperature sufficient to cause the fuel to be suitably vaporized and burnt with a smokeless flame.

In some cases it may be desirable to employ for securing the chamber or main burner element in advance of the nozzle means adapted to conduct heat to the nozzle or the tube in which it is mounted, while in other cases it may be desirable or necessary to reduce the transference of heat from the body of the burner to these parts.

Normally the chamber or main burner element will also be provided with a plurality of perforations so as to form what is known as a burner of the rose type.

If desirable or necessary the baffle may be arranged within the body of the burner element in such a manner that its distance from the base thereof may be adjustable.

A burner or vaporizer in accordance with the invention may be constructed as follows:—On a tube leading from a pressure vessel adapted to contain the fuel in the end of which tube an orifice is located and from a point adjacent to the nozzle extends a member acting as a support for the body of the burner. This member is of such character that the fuel ejected through the restricted orifice nipple is caused to mix with air on its way to the burner proper.

On the member in question at a point remote from the orifice a gallery is located and within the gallery a tubular portion, the upper end of which is provided with a perforated surface or grid extending be-

tween its side walls as is usual in burners of the rose type, while adjacent to its base a plurality of holes or slots are provided in its side walls, through which a proportion of the fuel and air supplied to the burner may pass in order to maintain or assist in maintaining the burner at a suitable temperature and means may be provided for the adjustment of the amount of fuel burnt at this zone.

Conveniently the tubular member is of less diameter at its upper end than at its base and it may be in the form of a stepped cylinder. In some cases, however, particularly with large burners the tubular member may be larger at its upper end than at its base.

Within the tubular member a baffle extending to a zone adjacent to the side wall of the member is located and in some cases the baffle is arranged so that its position may be adjusted to vary the distance between it and a seating provided in or formed in the gallery.

The position of this baffle is in all cases such that it will be secured with its lower surface only a small distance away from the aforesaid seating and where the baffle in question is arranged so that its position may be adjusted relatively to the seating an externally screw-threaded member may be provided thereon, this externally screw-threaded member being engaged in an internally screw-threaded hole coaxially located with respect to the tubular member.

With this construction the externally screw-threaded portion may also be arranged to act as a support for a fork for supporting an incandescent mantle.

In an alternative construction instead of forming the body of the burner as a rose it may be provided with tubular branches terminating in members adapted to act as burner roses with which are associated supports for incandescent mantles of the inverted type.

Conveniently the several parts of the burner in accordance with the invention are adapted to be detached one from the other so that in the unlikely event of any of these parts becoming injured they may be individually replaced.

The gallery supporting the tubular member is normally flanged so as to protect and deflect the flames issuing from the base of

the said portion in such manner that they may maintain this portion at a suitable temperature.

Certain constructions of burners in accordance with the invention are illustrated by way of example in the accompanying drawings, in which:—

Figure 1 is a view partly in section of a burner for liquid fuel such as burning oil attached to an oil container and adapted for use as an incandescent lamp.

Figure 2 is a sectional elevation of a burner adapted for burning heavy mineral oil or as it is commonly called "fuel oil", while

Figure 3 is a similar view of an alternative form of burner adapted for burning oil of the same character.

Referring to Figure 1, 1 is an oil reservoir, 2 an air pump for raising the pressure above the surface of the oil therein in order to force it from the reservoir through the nipple of the burner; 3 is a pressure gauge adapted to indicate the pressure in the container, the gauge, which may be dispensed with, being secured in the construction illustrated to the closure 4 of the tubulure 5 by which oil is introduced into the reservoir, while 6 is a pipe permanently connected to the reservoir adapted to lead the oil from the reservoir to the burner.

The burner in each of the constructions is secured to a tubular member 7 furnished at one end with a collar 8 which is designed to facilitate the connection of the same with a fuel reservoir and in the construction illustrated in Figures 2 and 3 is screw threaded, while as indicated in Figure 1 an annular trough 9 may be arranged about this tubular member as in certain known constructions of liquid fuel burners to facilitate raising the body of the burner to a suitable initial temperature by means of the heat produced by the combustion of a relatively small quantity of methylated spirit which for this purpose is introduced into the trough and ignited.

The base of the burner will normally be a casting or be formed by machining and in the construction illustrated it comprises a collar 10 by which it is connected to the tubular member and which it would appear should be a relatively thick or considerable body of metal, a plurality of arms 11, only one of which can be seen in each of the figures, with apertures 12 between the arms through which air will pass and mix with the fuel injected through the orifice 13, and a gallery 14 which as shown is internally screw threaded and is provided with a flange 15 extending in an upward direction. In screw-threaded engagement with the base of the burner is a tubular member in the form of a stepped cylinder 16, the upper end of which is provided with a diaphragm 17 per-

forated with a plurality of holes 18 and with a screw-threaded aperture in which is engaged the rod 19 to the lower end of which a baffle 20 is secured. This rod enables the distance between the plate and the seating 21 to be adjusted as previously indicated to ensure the production of a smokeless flame. Holes 22 are also provided adjacent to the base of the tubular member 16 through which a portion of the combustible mixture will pass and in the vicinity of which it will be burnt, thereby maintaining the tubular member at a temperature ensuring satisfactory combustion of the main body of the mixture which issues through the holes 18.

In all of the constructions the rod 19 is provided in its upper end with a socket in which may be engaged a fire-clay "fork" 23 for an incandescent mantle, as indicated in dotted line in Figure 1 by the reference 24.

The pressure vessel through which the fuel is fed to the burner may, as will be understood, be of any suitable character, the only essential characteristic of the fuel container being that it shall be capable of supplying the fuel to the orifice through which it is forced as a jet under a suitably high pressure.

While above the construction of burner adapted for use as a stove or lamp has been described in some detail it is to be understood that burners may be constructed in accordance with the invention for a variety of industrial purposes such as, for instance, firing boilers, furnaces or the like, and for such purposes, if desired, a plurality of burners may be associated with a single fuel container and that also a device of the general character above described may be used for generating fuel mixtures from liquid fuels and mixing gas for storage or for immediate use in engines of suitable type, or in burners more remote from the vaporizer.

The invention has been described more particularly with reference to burners and vaporizers for liquid fuels but it is to be observed that the invention extends to burners for gaseous fuels such as towns' gas including the features above described.

Further, it is to be observed that while an endeavour has been made to indicate what are the characteristic features of the invention, further experiment and development of the invention within the scope of this application may indicate that certain of the features which herein are suggested to be essential are in fact of subsidiary importance, while other details are of major consequence in securing the results obtained with the construction of burner described.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A burner for liquid fuels comprising a chamber located in advance of an orifice,

through which the liquid fuel is ejected, said chamber having an opening through which the fuel admixed with air may enter the chamber, a baffle associated with said opening and extending to a zone adjacent to the side walls thereof, and, adjacent to the base of the chamber, holes through which a portion of the mixture of fuel and air will be caused to pass, and thereby heat the chamber and base to a temperature sufficient to cause the fuel to be suitably vaporized and burnt with a smokeless flame.

2. A burner for gaseous and liquid fuels comprising a tube leading from a pressure vessel adapted, to contain fuel, a nozzle or nipple in the end of said tube, a member acting as a support for the body of the burner in advance of said nozzle adapted to cause the fuel to mix with air, a gallery located on said member and within the gallery a tubu-

lar portion, the upper end of which is provided with a perforated surface or grid extending between its side walls and having adjacent to its base a plurality of holes in its side walls, through which a proportion of the fuel and air supplied to the burner may pass in order to assist in maintaining the burner at a suitable temperature, a seating located at the entrance to the chamber and a baffle adjacent to said seating, said baffle extending outward to a zone adjacent to the side walls of the chamber.

3. A burner for gaseous and liquid fuels as claimed in claim 2, in which means are provided for the adjustment of the amount of fuel which is burnt for maintaining the burner at a suitable temperature.

In testimony whereof I have signed my name to this specification.

ARTHUR JOSEPH SESSIONS.