PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in or relating to Incandescent Oil Vapour Lamps of the Pressure Type

We, ALADDIN INDUSTRIES LIMITED, a British Company, of Aladdin Buildings, Greenford, Middlesex, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to oil burning incandescent lamps of the pressure type and has for its main object to provide an improved construction or arrangement designed to overcome certain disadvantages hitherto experienced in the manufacture and use of such lamps.

Pressure lamps as previously constructed have frequently employed an inverted incandescent mantle involving an arrangement wherein a mantle support or air and fuel supply tubes or both extend upwards from the base portion of the lamp structure and partially obscure the light from the mantle. In addition, a preheating device has hitherto formed an auxiliary feature and in some instances this device has also occupied a position in which it obscures the light emitted. By means of the present invention these disadvantages are avoided and a pressure lamp provided in which the construction of the burner parts is simplified; and an auxiliary preheating and igniting device is rendered unnecessary; the light from the mantle is unobstructed; and the burner can be ignited and the lamp brought to full running condition in a very short space of time.

According to the invention a pressure lamp comprises a fuel reservoir, a control valve mounted on said reservoir, a burner ~~heat~~ head supported above said reservoir, means for supporting an incandescent mantle above said burner head, and a burner jet device disposed beneath said burner head and is characterised by a fuel supply tube extending upwards from said control valve and serving as the sole support for the burner head, a burner jet disposed axially below said burner head and a jet cleaning device associated with said jet, the said fuel supply tube extending through the burner head to form a vaporizer tube of inverted **U**-formation, the opposite arm of which extends downwardly through the burner head and into supply communication with the jet.

Reference will now be made to the accompanying drawings wherein:—

Fig. 1 is an elevation, partly in section of a pressure lamp constructed according to the invention but with the lamp glass and top cover omitted for clearness;

Fig. 2 is a sectional elevation, to an enlarged scale of the burner jet, burner and pre-heater;

Fig. 3 is a sectional plan taken on the line A—B of Fig. 1, and

Fig. 4 is a sectional plan taken on the line C—D of Fig. 1.

In the construction illustrated and referring first to Fig. 1, the pressure lamp includes a reservoir 1 provided with a pump 2 for raising the pressure within the reservoir in known manner. Mounted upon the reservoir is a valve housing 3 having a hand adjusting member 4 projecting from it to enable the valve to be moved to any one of three positions. In one position a mixture of air and fuel is supplied to the burner; in another position fuel only is supplied to the burner; and in a third position the reservoir is shut off. From the valve housing 3 a vaporizer tube 5 extends upwardly in a vertical direction to a point where the tube is formed into a **U**-shaped bend 6 from where it is continued downwards at 7 and connected to the casing 8 of a burner jet situated centrally of and supported from a bracket 9 fixed to the vaporiser tube 5, the said jet being also disposed in vertical alignment with the centre of the **U**-shaped bend 6 in the vaporizer tube. The bracket 9 is conveniently formed as a tray to collect any sur-

plus liquid fuel that may pass through the jet during the preliminary stages of lighting the lamp.

At a level below the said U-shaped bend the two parallel portions 5 and 7 of the vaporizer tube pass through apertures in a metal disc 10 which is fixed to the said tubes, this disc serving to support a burner head 11. This burner head comprises an annular casing open on its inner side at 12 and having a ring of perforations 13 (Fig. 3) in an upper inwardly extending flange portion thereof, the inner edge of said flange portion seating in a groove formed around the edge of the said disc. Secured into the lower part of the annular casing is a sleeve 14 which depends around the vaporizer tubes and terminates a short distance above the jet. The base of an upright mantle 15 is secured in an annular groove 16 around the exterior of the burner head. Communication between the reservoir and the vaporizer tube 5-6-7 and burner jet 21 is controlled by means of the hand operated valve device 4.

The interior of the burner jet casing 8 is shown in Fig. 2. Mounted centrally within the casing is a cleaning needle 17 adapted to be pushed through the burner jet orifice 21. This needle is movably mounted in a sleeve 18 fixed into and depending from the bracket 9 and terminating at its lower end in a gland 19 through which the lower end of the needle 17 extends and is connected to a disc 20 (Figs. 2 and 4) slidably mounted upon the lower part of the vaporizer tube 5. By reciprocating this disc by hand the needle 17 is moved into and out of the burner jet orifice 21.

The operation of the pressure lamp above described is as follows:—

The control valve is first moved to a position in which a mixture of fuel and air can ascend from the reservoir through the vaporizer tube 5-6-7 and a flame is applied to the jet 21. The mixture of air under pressure with the liquid fuel causes an immediate flow through the vaporizer tube 5-6-7 as soon as the valve is opened and the compressed air causes sufficient atomisation of the fuel to enable a flame to be kindled at the burner jet. This condition is maintained for a short period until the flame has heated the vaporizer tube to an extent sufficient to vaporize the liquid fuel when the position of the control valve is altered to admit fuel only from the reservoir to the vaporizer tube. Operation thereafter continues by the flow of vaporized fuel from the jet inducing air through the sleeve 14 of the burner head, the mixture being deflected outwards by the disc 10 acting as a baffle to pass through the annular opening 12 and upwards through the ring of perforations 13 to burn within the mantle 15.

By means of the arrangements above described, the mantle supporting means at 16 and the burner jet 21 are situated wholly below the mantle whose light is therefore unobstructed while the form and disposition of the vaporizer tube 5-6-7 in conjunction with the absence of an auxiliary preheating device greatly simplifies the lamp both in manufacture and in use as a flame can be applied directly to the burner jet and the lamp brought into its running condition in a very short space of time.

A vaporizer and burner constructed as above described can also be used for heating purposes by omitting the mantle from the assembly.

What we claim is:—

1. A pressure lamp comprising a fuel reservoir a control valve mounted on said reservoir, a burner head supported above said reservoir, means for supporting an incandescent mantle above said burner head, and a burner jet device disposed beneath said burner head characterised by a fuel supply tube extending upwards from said control valve and serving as the sole support for the burner head, a burner jet disposed axially below said burner head and a jet cleaning device associated with said jet, the said fuel supply tube extending through the burner head to form a vaporizer tube of inverted U-formation the opposite arm of which extends downwardly through the burner head and into supply communication with the jet.

2. A pressure lamp according to Claim 1 wherein the said burner head is of substantially cylindrical form, air being induced through the open lower end by the ascending vaporized fuel, and the mixture being deflected outwards by an internal baffle to a ring of perforations formed in the top of the burner head through which it passes to burn within the mantle.

3. A pressure lamp according to Claim 1 or 2 wherein the fuel supply tube carries a bracket which supports the burner jet ~~end of a jet cleaning needle connected to casing from the base of which depends one~~ an element slidably mounted on the said supply tube for the purpose of operating and retracting the cleaning needle.

4. A pressure lamp according to any of the preceding claims including a hand operated control valve arranged in one position to admit a fuel and air mixture to the vaporizer tube, in another position to admit fuel only and in a third position to shut off the said tube from the reservoir to render the lamp inoperative.

5. A vaporizer and burner constructed according to any of the preceding claims and adapted for use without a mantle as a

casing from the base of which depends one end of a jet cleaning needle connected to

plus liquid fuel that may pass through the jet during the preliminary stages of lighting the lamp.

At a level below the said U-shaped bend the two parallel portions 5 and 7 of the vaporizer tube pass through apertures in a metal disc 10 which is fixed to the said tubes, this disc serving to support a burner head 11. This burner head comprises an annular casing open on its inner side at 12 and having a ring of perforations 13 (Fig. 3) in an upper inwardly extending flange portion thereof, the inner edge of said flange portion seating in a groove formed around the edge of the said disc. Secured into the lower part of the annular casing is a sleeve 14 which depends around the vaporizer tubes and terminates a short distance above the jet. The base of an upright mantle 15 is secured in an annular groove 16 around the exterior of the burner head. Communication between the reservoir and the vaporizer tube 5-6-7 and burner jet 21 is controlled by means of the hand operated valve device 4.

The interior of the burner jet casing 8 is shown in Fig. 2. Mounted centrally within the casing is a cleaning needle 17 adapted to be pushed through the burner jet orifice 21. This needle is movably mounted in a sleeve 18 fixed into and depending from the bracket 9 and terminating at its lower end in a gland 19 through which the lower end of the needle 17 extends and is connected to a disc 20 (Figs. 2 and 4) slidably mounted upon the lower part of the vaporizer tube 5. By reciprocating this disc by hand the needle 17 is moved into and out of the burner jet orifice 21.

The operation of the pressure lamp above described is as follows:—

The control valve is first moved to a position in which a mixture of fuel and air can ascend from the reservoir through the vaporizer tube 5-6-7 and a flame is applied to the jet 21. The mixture of air under pressure with the liquid fuel causes an immediate flow through the vaporizer tube 5-6-7 as soon as the valve is opened and the compressed air causes sufficient atomisation of the fuel to enable a flame to be kindled at the burner jet. This condition is maintained for a short period until the flame has heated the vaporizer tube to an extent sufficient to vaporize the liquid fuel when the position of the control valve is altered to admit fuel only from the reservoir to the vaporizer tube. Operation thereafter continues by the flow of vaporized fuel from the jet inducing air through the sleeve 14 of the burner head, the mixture being deflected outwards by the disc 10 acting as a baffle to pass through the annular opening 12 and upwards through the ring of perforations 13 to burn within the mantle 15.

By means of the arrangements above described, the mantle supporting means at 16 and the burner jet 21 are situated wholly below the mantle whose light is therefore unobstructed while the form and disposition of the vaporizer tube 5-6-7 in conjunction with the absence of an auxiliary preheating device greatly simplifies the lamp both in manufacture and in use as a flame can be applied directly to the burner jet and the lamp brought into its running condition in a very short space of time.

A vaporizer and burner constructed as above described can also be used for heating purposes by omitting the mantle from the assembly.

What we claim is:—

1. A pressure lamp comprising a fuel reservoir a control valve mounted on said reservoir, a burner head supported above said reservoir, means for supporting an incandescent mantle above said burner head, and a burner jet device disposed beneath said burner head characterised by a fuel supply tube extending upwards from said control valve and serving as the sole support for the burner head, a burner jet disposed axially below said burner head and a jet cleaning device associated with said jet, the said fuel supply tube extending through the burner head to form a vaporizer tube of inverted U-formation the opposite arm of which extends downwardly through the burner head and into supply communication with the jet.

2. A pressure lamp according to Claim 1 wherein the said burner head is of substantially cylindrical form, air being induced through the open lower end by the ascending vaporized fuel, and the mixture being deflected outwards by an internal baffle to a ring of perforations formed in the top of the burner head through which it passes to burn within the mantle.

3. A pressure lamp according to Claim 1 or 2 wherein the fuel supply tube carries a bracket which supports the burner jet ~~end of a jet cleaning needle connected to casing from the base of which depends one~~ an element slidably mounted on the said supply tube for the purpose of operating and retracting the cleaning needle.

4. A pressure lamp according to any of the preceding claims including a hand operated control valve arranged in one position to admit a fuel and air mixture to the vaporizer tube, in another position to admit fuel only and in a third position to shut off the said tube from the reservoir to render the lamp inoperative.

5. A vaporizer and burner constructed according to any of the preceding claims and adapted for use without a mantle as a

casing from the base of which depends one end of a jet cleaning needle connected to

heating device.

6. A pressure lamp constructed, arranged and adapted to operate as herein described with reference to the accompanying drawings.

Dated this 3rd day of October, 1951.
HERON ROGERS & CO.,
Agents for Applicants,
Bridge House, 181, Queen Victoria Street,
London, E.C.4.

PROVISIONAL SPECIFICATION

Improvements in or relating to Incandescent Oil Vapour Lamps of the Pressure Type

We, ALADDIN INDUSTRIES LIMITED, a British Company, of Aladdin Buildings, Greenford, Middlesex, do hereby declare this invention to be described in the following statement:—

This invention relates to oil burning incandescent lamps of the pressure type and has for its main object to provide an improved construction or arrangement designed to overcome certain disadvantages hitherto experienced in the manufacture and use of such lamps.

Pressure lamps as previously constructed have frequently employed an inverted incandescent mantle involving an arrangement wherein a mantle support or air and fuel supply tubes or both extend upwards from the base portion of the lamp structure and partially obscure the light from the mantle. In addition, a preheating device has hitherto formed an auxiliary feature and in some instances this device has also occupied a position in which it obscures the light emitted. By means of the present invention these disadvantages are avoided and a pressure lamp provided in which the construction of the burner parts is simplified; an auxiliary preheating and igniting device is rendered unnecessary; the light from the mantle is unobstructed; and the burner can be ignited and the lamp brought to full running condition in a very short space of time.

According to the invention a pressure lamp of the kind referred to is characterised in that a vaporizing tube extending between a reservoir and a burner jet is arranged with part of its length lying within the confines of the mantle for the purpose of vaporizing the fuel before it reaches the jet disposed in a position below the lower edge of the mantle.

According to a preferred form of the invention a pressure lamp includes a reservoir provided with a pump for raising the pressure within the reservoir in known manner. Mounted upon the reservoir is a valve housing from which a vaporizer tube extends upwardly in a vertical direction to a point where the tube is formed into a **U**-shaped bend from where it is continued downwards and connected to a burner jet situated centrally of and supported from the reservoir, the said jet being also disposed in vertical alignment with the centre of the **U**-shape bend in the vaporizer tube. At the centre of the top of the **U**-shaped bend there is fixed a mantle supporting element.

At a level below the said **U**-shaped bend the two parallel portions of the vaporizer tube pass through apertures in a metal disc which is fixed to the said tubes, this disc serving to support a burner head. This burner head comprises an annular casing open on its inner side and having a ring of perforations in its upper surface, the inner edge of said upper surface seating in a groove formed around the edge of the said disc. The lower surface of the annular casing is formed integral with a sleeve which depends around the vaporizer tubes and terminates a short distance above the jet. The proportions of the parts above described are such that the base of the mantle rests upon the upper surface of the burner head outside the ring of perforations.

Communication between the reservoir and the vaporizer tube and burner jet is controlled by means of a hand operated valve device arranged within the aforesaid valve housing and constructed to occupy either of two operative positions in one of which a mixture of fuel and air is admitted to the vaporizer tube while in the other position fuel only is admitted.

Adjacent the valve housing is a second housing embodying a hand operated cam device for pushing a cleaning needle through the burner jet orifice, the action being against the resistance of a spring coiled around the base of the cleaning needle and serving to return it to inoperative position when a cleaning movement is completed.

The operation of the pressure lamp above described is as follows:—

The control valve is first moved to a position in which a mixture of fuel and air can ascend from the reservoir through the vaporizer tube and a flame is applied to the jet. The mixture of air under pressure with the liquid fuel causes an immediate flow through the vaporizer tube as soon as the valve is opened and the compressed air causes sufficient atomisation of the fuel

heating device.

6. A pressure lamp constructed, arranged and adapted to operate as herein described with reference to the accompanying drawings.

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At a level below the said **U**-shaped bend the two parallel portions of the vaporizer tube pass through apertures in a metal disc which is fixed to the said tubes, this disc serving to support a burner head. This burner head comprises an annular casing open on its inner side and having a ring of perforations in its upper surface, the inner edge of said upper surface seating in a groove formed around the edge of the said disc. The lower surface of the annular casing is formed integral with a sleeve which depends around the vaporizer tubes and terminates a short distance above the jet. The proportions of the parts above described are such that the base of the mantle rests upon the upper surface of the burner head outside the ring of perforations.

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The operation of the pressure lamp above described is as follows:—

The control valve is first moved to a position in which a mixture of fuel and air can ascend from the reservoir through the vaporizer tube and a flame is applied to the jet. The mixture of air under pressure with the liquid fuel causes an immediate flow through the vaporizer tube as soon as the valve is opened and the compressed air causes sufficient atomisation of the fuel

to enable a flame to be kindled at the burner jet. This condition is maintained for a short period until the flame has heated the vaporizer tube to an extent sufficient to vaporize the liquid fuel when the position of the control valve is altered to admit fuel only from the reservoir to the vaporizer tube. Operation thereafter continues by the flame at the jet inducing air through the sleeve of the burner head which passes upwards through the ring of perforations to support combustion within the mantle.

By means of the arrangements above described, the mantle supporting means and the burner jet are situated wholly below the mantle whose light is therefore unobstructed while the form and disposition of the vaporizer tube in conjunction with the absence of an auxiliary preheating device greatly simplifies the lamp both in manufacture and in use as a flame can be applied directly to the burner jet and the lamp brought into its running condition in a very short space of time.

A vaporizer and burner constructed as above described can also be used for heating purposes by omitting the mantle from the assembly.

Dated this 13th day of December, 1950.

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