

F. J. H. RUSTIGE.
 SELF PRESSURE LAMP FOR LIQUID FUEL.
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1,006,133.

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Fig. 1.

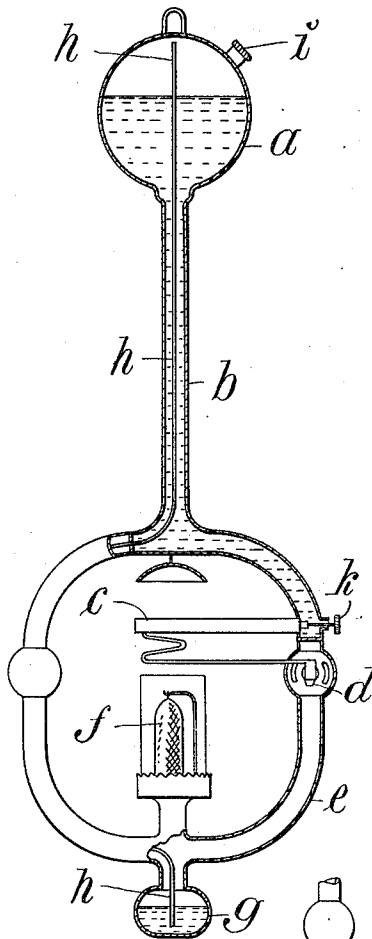


Fig. 2.

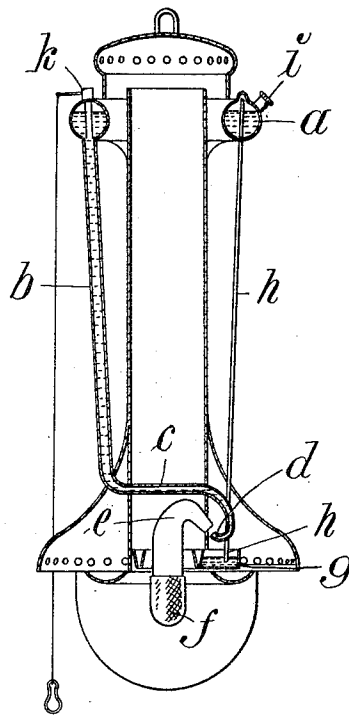
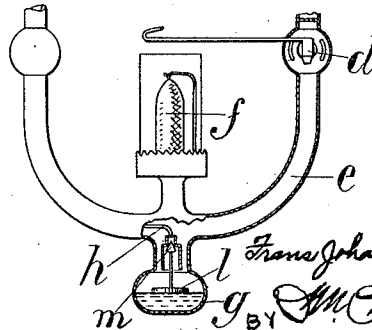


Fig. 3.



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SELF-PRESSURE LAMP FOR LIQUID FUEL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANS JOHAN HENRIK RUSTIGE, a subject of the King of Sweden, residing at Lilla Essingen, Stockholm, Sweden, have invented new and useful Improvements in Self-Pressure Lamps for Liquid Fuel, of which the following is a specification.

For preventing the unintentional escape of the liquid fuel in self pressure lamps (viz. such lamps, in which liquid fuel by its own weight is brought to the vaporizer from a higher situated tank,) either thermostatic safety arrangements are used, which, however, are not reliable, or else the gas outlet of the vaporizer is placed a little higher than the fuel tank, which arrangement, however, is not always possible.

The present invention has for its object another arrangement for the above-mentioned purpose in such lamps or heating apparatus, which arrangement can also be used in such lamps, where the above-mentioned arrangement of the outlet of the vaporizer higher than the fuel tank is not possible.

The arrangement, generally speaking, consists in connecting the space above the liquid level in the fuel tank to the atmosphere only through a port which is closed by means of the liquid fuel escaping through the outlet of the vaporizer, when the regular vaporization ceases. Thus the air is prevented from entering the top space of the fuel tank and the fuel from escaping. The said port can be closed either directly by the fuel escaped, which may be collected in a receptacle receiving also the one end of a pipe for supplying air to the top space of the fuel tank, or it may be closed by means of a valve operated by a float-gage on the liquid in the said collecting receptacle.

In the accompanying drawings, Figure 1 is a vertical sectional view of a pressure lamp illustrating the invention. Fig. 2 is a similar view of a modified construction of lamp, and Fig. 3 is a partial sectional view of a still further modification.

The lamp shown in Fig. 2 differs from that illustrated in Fig. 1 not only by its shape, but also in that the collecting receptacle is placed immediately beneath the discharge aperture of the vaporizer, thus making it possible to use the said receptacle also

for receiving the liquid (for instance alcohol) serving to heat the vaporizer during its start.

The lamp illustrated in Fig. 1 has a fuel tank *a* with a filling inlet, which may be hermetically closed by means of a screw plug *i*. This tank communicates by a pipe *b* with the vaporizer *c*, consisting of a coil, provided with a nozzle *d*, which opens into a mixing pipe *e* for the introduction of air, said pipe leading to the burner which supports the incandescent body *f*. This mixing pipe according to my invention is combined with a receptacle or cup *g*, situated lower than the outlet of the vaporizer, and serving to collect condensed fuel, or fuel which has escaped through the mixing pipe. In this receptacle one end of a pipe *h* opens, the other end of which is situated higher than the liquid level in the closed fuel tank *a*. The device works in the following manner. After the tank has been filled with fuel, and the inlet opening closed, the vaporizer is heated in the usual manner by alcohol or the like; the valve *k* of the vaporizer is then opened, and the fuel from the tank *a* flows to the vaporizer, where it becomes vaporized. The gas thus produced prevents by its own pressure a too rapid flowing to the vaporizer of new fuel from the tank *a*, which as the fuel escapes becomes filled with air through the pipe *h*. The gas escapes through the nozzle *d* and is mixed in the pipe *e* with air, whereupon the mixture escapes through the burner, where it is ignited, thus bringing the body *f* into incandescence and maintaining the heat necessary for the continuous vaporization in the vaporizer. If now for some reason the regular vaporization should stop, without the valve being closed, the fuel escapes in a liquid state through the nozzle *d* and the mixing pipe *e*, and is collected in the receptacle *g*, where it rises above the mouth of the pipe *h*. The said mouth thus becomes closed and air is prevented from entering the upper part of the fuel tank *a*, whereby it becomes impossible for the fuel to escape from the tank. If the lamp shall be lighted again it is necessary to empty the receptacle *g*, so that air can enter through the pipe *h* to the tank *a*.

In the lamp type illustrated in Fig. 2—that is a lamp with invert burner—the same parts as in Fig. 1 are shown, but the recep-

tacle or cup *g* in this case is formed of the cup commonly used for receiving the liquid used for introducing the vaporizing, viz. for preheating the vaporizer. By such an arrangement it is possible to open the valve *h* immediately after the filling of the said cup and igniting its contents, because while the contents of the cup reaches over the lower mouth of the pipe *h*, it is not possible for the fuel to escape from the tank *a*, but as soon as the said mouth becomes open, when the liquid in the cup is finished, the fuel begins to flow from the tank *a*, and the vaporizer thus is heated sufficiently for the vaporizing. By means of this arrangement it is possible to leave the lamp at once after igniting the contents of the cup, and it is not necessary to await the consumption of the fuel in the cup, before opening the valve *h*. The cup *g* of course may be formed by a recess in the mixing pipe *e* or of this pipe itself, if the lower part of the pipe *h* is arranged in the vicinity of the lowest point in the pipe *e*, where the fuel entering the pipe, when the vaporizing begins to be irregular, is collected. It is also clear, that more than one pipe *h* may be used between the fuel tank *a* and the receptacle *g*, which during certain circumstances forms a liquid-seal.

In the lamp shown in Fig. 3, the pipe *h* does not extend down into the receptacle *g*, a float-gage *l* being arranged in the latter and carrying at its upper end a valve *m* serving to close the lower end of the pipe *h*, which is situated at some distance above the receptacle. When liquid fuel escapes from the vaporizer into the receptacle *g*, the float-gage *l* is elevated and causes the valve *m* to close the mouth of the pipe *h*, thus preventing the access of air to the fuel tank *a*.

Having now particularly described the

nature of my invention and the manner of its operation, what I claim is:

1. In self-pressure lamps and similar heating apparatus for liquid fuel, the combination of a closed liquid fuel tank, a vaporizer communicating therewith and situated below the same, a conduit having its upper mouth situated above the liquid level of the tank, and means operatively associated with the lower mouth of said conduit to cause the non-vaporized fuel which escapes from the vaporizer to close said lower mouth.

2. In self-pressure lamps and similar heating apparatus for liquid fuel, the combination of a closed liquid fuel tank, a vaporizer communicating therewith and situated below the same, a collecting receptacle for non-vaporized fuel escaped from the vaporizer, said receptacle being situated beneath the vaporizer, and a conduit having its upper mouth situated above the liquid level of the tank and the lower mouth in said receptacle, the liquid in the same forming a liquid seal for the conduit.

3. In self-pressure lamps and similar heating apparatus for liquid fuel, the combination of a closed liquid fuel tank, a vaporizer communicating therewith and situated below the same, a receptacle for a preheating liquid fuel placed in the proximity of the vaporizer and a conduit having its upper mouth situated above the liquid level of the tank and the lower mouth in the receptacle for the preheating liquid fuel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANS JOHAN HENRIK RUSTIGE.

Witnesses:

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