

F. J. H. RUSTIGE.
 VAPORIZING APPARATUS FOR LIQUID FUEL.
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Patented Jan. 25, 1910.

Fig. 1.

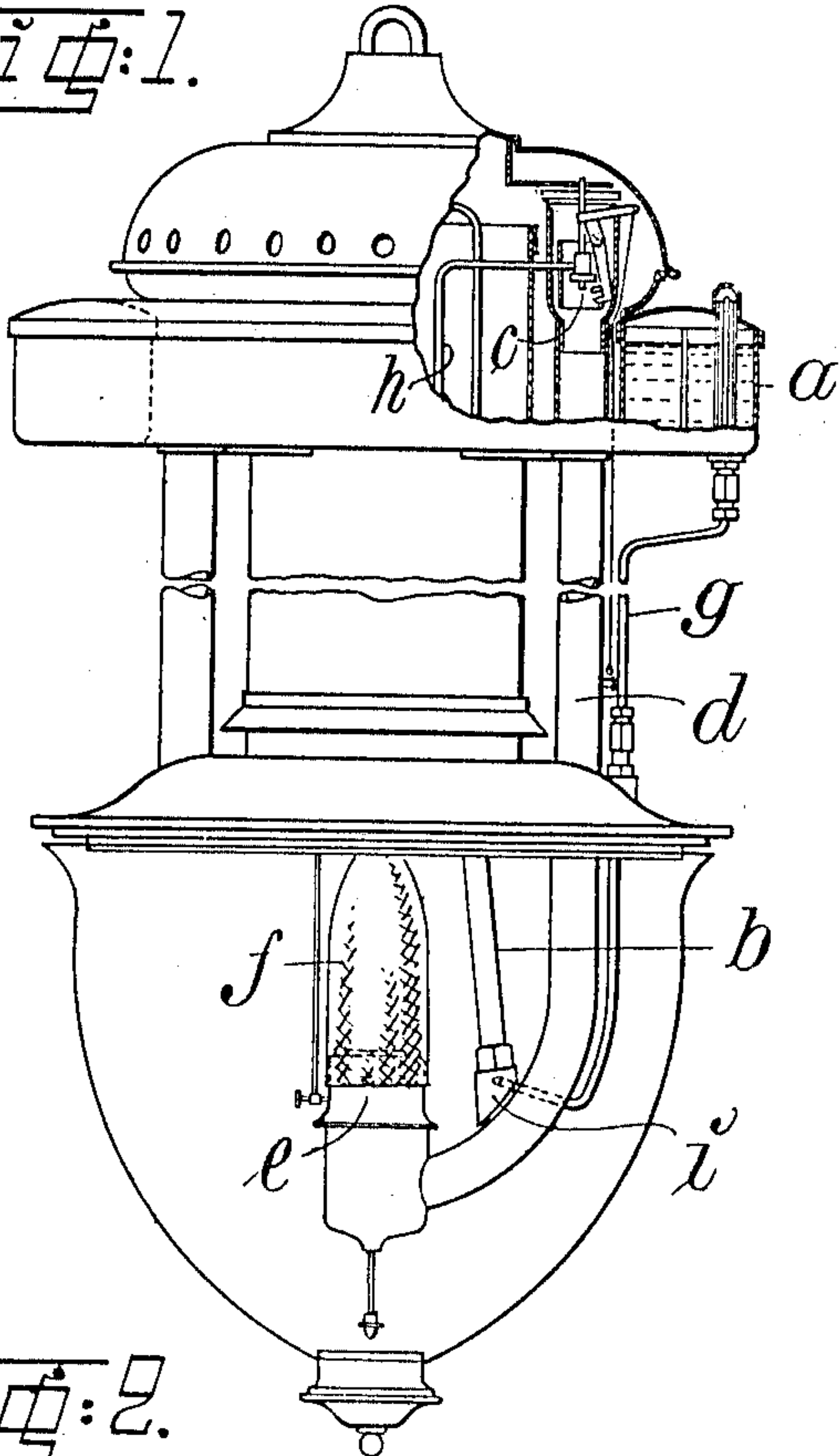
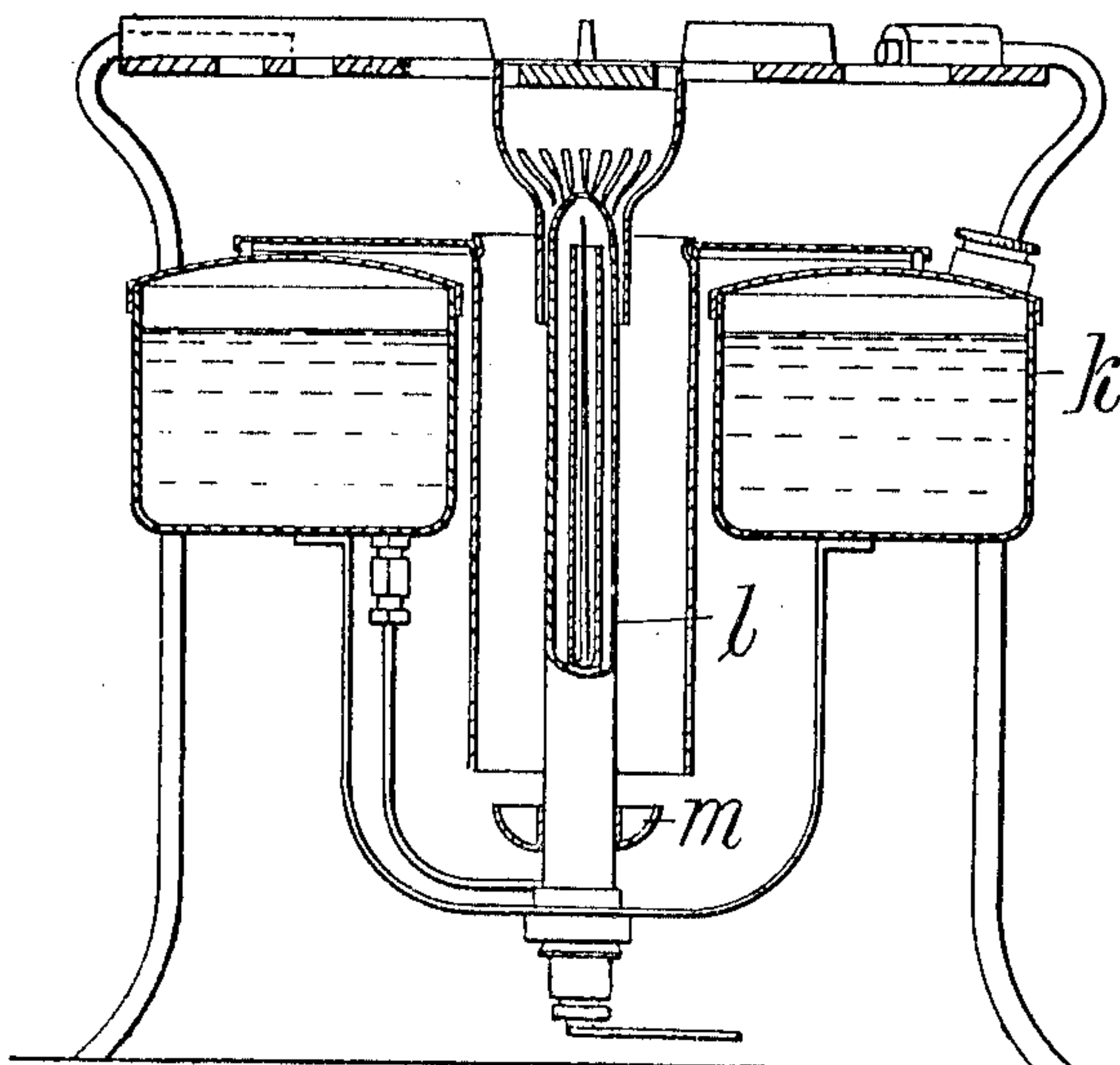


Fig. 2.



WITNESSES

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VAPORIZING APPARATUS FOR LIQUID FUEL.

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To all whom it may concern:

Be it known that I, FRANS JOHAN HENRIK RUSTIGE, a citizen of Sweden, residing at 8 Kungsholmstorg, Stockholm, Sweden, engineer, have invented new and useful Improvements Relating to Vaporizing Apparatus for Liquid Fuel, of which the following is a specification.

In the vaporizing apparatus for liquid fuel now in use, in which the latter is forced to the vaporizer by its own gravity, that opening in the vaporizer through which the gas escapes to be mixed with the air, is situated lower than the level of the fuel in the fuel-tank. That arrangement, however, causes the inconvenience that if, for any reason, the vaporized fuel should be cooled so much in the vaporizer as to be condensed again, and thus escape from the nozzle in a liquid state this liquid may suck with it the whole content of the tank and cause damage. Of course a valve can be placed in the conduit between the tank and the vaporizer, but such a valve is closed only when the vaporizer ceases to operate (*e. g.* when in illuminating apparatus the lamp is extinguished) while the aforesaid cooling of the vaporizer may take place while the apparatus is in action, especially in illuminating apparatus placed in the open air.

The present invention has for its purpose to overcome the aforesaid inconvenience, that is, to provide security against such an escape of liquid fuel, so that vaporizers of the kind in question will be quite safe. This is accomplished by placing the aperture by which the vaporizer communicates with the atmosphere (and at which the vaporized fuel thus is immediately mixed with the air required for combustion), higher than the highest level of the fuel in the fuel tank.

In the accompanying drawing two different vaporizing apparatus embodying the invention and having the fuel tank placed higher than the vaporizer, so that the gas pressure is produced by the difference between the two fluid levels in these parts, are illustrated. The one apparatus, belonging to a lamp, is shown in a side view, partly in section, in Figure 1, and the other, adapted for a stove, in vertical section in Fig. 2.

Referring to Fig. 1, *a* is the fuel tank, *b* the vaporizer with the discharge aperture or nozzle *c*, *d* the mixing pipe, where the gas is mixed with accompanying air, *e* the flame spreader and *f* the incandescent mantle.

According to the invention, the discharge opening or nozzle *c* of the vaporizer is placed higher than the fluid-level in the tank *a*, which by a pipe conduit *g* is connected to the vaporizer *b*, the latter being connected to the nozzle by a pipe *h*, in which the fuel, when the apparatus is in rest, rises to the same height as in the tank *a*, as no valve is inserted in the conduit.

When the lamp is to be put in action the vaporizer *b* is heated in a usual manner, for instance by the combustion of alcohol in the bowl *i*, whereby the fuel contained in *b* is vaporized and the gas formed ascends through the vaporizer and escapes through the nozzle *c*. The opening of the latter being small, the gas cannot escape in the same degree as it is produced, and consequently a pressure will arise in the vaporizer *b* and depress the column of liquid fuel, until balance is obtained between the gas and liquid pressure. Such a column of liquid fuel will always be conserved in the lower part of the vaporizer, which is not considerably heated. When the vaporization thus has commenced, it is maintained in a known manner by the heat produced by the combustion (in the incandescent mantle) of the gas escaping through the nozzle *c* and mixing with air in the pipe *d*.

By the arrangement now described the gas produced will maintain a constant pressure, the amount of which corresponds to the difference between the liquid levels in the tank *a* and the vaporizer *b*, the uniformity of which pressure is especially necessary for illuminating apparatus.

The lamp is extinguished by closing the discharge opening or nozzle *c*, when the vaporization will cease, and the fuel again rise in the vaporizer to the same height as in the tank *a* without being able, however, to escape in a liquid state through the nozzle, even if the latter is opened again, because the nozzle is situated higher than the level in the tank.

In the cooking-stove shown in Fig. 2, *l* is the fuel tank, from which a pipe leads to the vaporizer *l*, the discharge opening of which is situated above the liquid level in the fuel tank. *m* is a preliminary heating bowl. The apparatus operates in the same manner as already described with reference to the lamp with the exception, that the vaporizer is not heated directly by the flame of the burner, but by heat conducted to the

same from the burner through some strongly heat-conducting material heated from the latter.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

10 1. A vaporizer for liquid fuel comprising a fuel tank, a vaporizer tube below the same and connected thereto, and an outlet nozzle connected with the tube and located above the liquid level in the tank.

2. A vaporizer comprising a burner, a

tank, a vaporizer tube in proximity to the burner and connected with the tank, a nozzle 15 connected with the tube and located above the liquid level in the tank, and an air tube surrounding the nozzle and leading to the burner.

In testimony whereof I have signed my name to this specification in the presence of 20 two subscribing witnesses.

FRANS JOHAN HENRIK RUSTIGE.

Witnesses:

BEIGER NORDFELDT,
H. TELANDER.