

## PATENT SPECIFICATION



Convention Date (France): Oct. 14, 1936.

480.515

Application Date (in United Kingdom): Aug. 27, 1937. No. 23568/37.

Complete Specification Accepted: Feb. 23, 1938.

### COMPLETE SPECIFICATION

#### Improvements in Signal Lamps

I, OMER MARIE CYRILLE MARISCHAL, a Belgian Subject, of 24, Rue du Maréchal Foch, Saint Die (Vosges), France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to signal lamps adapted to utilise liquid hydrocarbon as fuel and in which the flame is caused to flicker.

It has been proposed to provide a flickering flame signal lamp in which the wick is enclosed in a metallic tube, to the upper portion of which is attached an open topped bulb adapted to enclose a small portion of the wick. The lower part of this bulb is perforated to allow a stream of air to pass up inside and around the wick. In operation the flame is never at rest after being lighted, the flicker of the flame being due to minute explosions caused by accumulation of oil gas in the bulb, this gas being automatically mixed with the right quantity of air admitted through the perforations at the lower part of the bulb, said bulb being capable of adjustment on its supporting tube so that it can be raised or lowered in order to obtain the correct air and gas mixture inside the bulb.

Now according to the present invention there is provided a flickering-flame signal lamp adapted to employ liquid hydrocarbon fuel which includes an incombustible sheath located around and extending above the burner to leave a free space between its interior surfaces and the burner and any portion of the wick extending above said burner, and means to regulate the entry of air into the said free space at the lower end of the sheath for the purpose of adjusting the amount of air mixing with vaporised carburant, thus enabling the lamp to operate at any desired intensity, and for the periodicity of the flickering action to be adjusted.

In operation the wick at the time of lighting is brought to the height of the upper part of the sheath so that the flame is similar to that of an ordinary petro-

leum lamp. The portion of the wick above the burner, yet coming within the sheath, not being free does not become ignited. Consequently, the heat of the flame passes to the sheath and to the burner to vaporise the fuel from this lower part of the wick and the air passing upwards in the free space carries this vaporised fuel with it. Thus the petroleum or other carburant rising in the wick under the effect of capillary attraction is transformed into combustible gas all around the non-ignited lower part of the wick and that under the influence of the heat given off.

These gases coming into contact with the flame become ignited to intensify momentarily the flame. This ignition, however, being in the nature of an explosion, produces a displacement of air which drives back towards the lower part of the interior of the sheath the gas currents which follow those which have been ignited. Their driving back being very rapid, the gases which are formed again begin their upward movement in order to become ignited and produce another intensification of the flame.

In this manner there is produced a flame having a reduced lighting followed by an intense lighting to give the necessary flicker. The maximum intensity of the flame can be regulated according to the height of the wick and the periodicity of the flicker by the regulation of the entry of air into the sheath. This latter can be effected in various ways.

In order that the invention may be better understood it will now be described with reference to the accompanying drawing, in which:—

Fig. 1 shows in front elevation and partly in section a lamp and burner constructed according to one method of carrying the invention into effect.

Fig. 2 shows a fragmentary view in side sectional elevation.

Figs. 4 and 5 show in elevation and plan a device for regulating the entry of air, and

Figs. 6 and 7 a front elevation and side elevation of a lantern having a lamp with flickering flame formed in sheet metal

[~~Printed~~]

Price 25p.

Price 7/4

made according to the invention.

The burner of the lantern 1 is formed in any usual manner by a wick-holder 2 of rectangular form through which passes the wick 3 which extends in the usual manner into the carburant contained in the reservoir 4. The wick-holder is soldered to a ring 5 in turn fixed by screwing or soldering to the reservoir 4 by means of a ring 7. 9 is the usual wick-adjusting control similar to an ordinary petroleum lamp.

6 is a sheath of incombustible material of general rectangular section and of such size as to leave a space between its inner surface and the burner 2 when placed therearound. As shown, it extends well above the top of the burner 2 and at its lower end is fixed to or made integral with a cylindrical portion 8 which takes over the fixing ring 7 and has a slot 8' for the passage of the control rod 9.

10 are orifices which come opposite and at the lower portion of the sheath 6. The size of the openings 10 are, by way of example regulated by the device shown in Fig. 4. This device comprises a stirrup 11 with notches 12, the free ends of the limbs being connected by a headed screw 13 with a clamping milled nut 14, a spring 15 coming between the limbs to ensure an automatic opening of the limbs when the nut is unscrewed. This device is placed over the sheath 6 and is disposed at the lower portion thereof. It can be slid into any suitable adjusted position, where it is clamped by the nut 14 so that the notches 12 more or less close the openings 10. The object is to regulate the amount of air entering these openings 10 to pass upwards between the wick-holder 2 and the interior of the sheath 6.

The operation will be readily understood. The wick is brought to the level of the upper end of the sheath 6 and ignited. This heats the sheath and the burner so that air entering through the orifices 10 mixes with the vaporised carburant given off by the exposed surface of the wick coming within the sheath 6. On passing upwards this mixture comes into contact with the flame at the upper end of the wick and becomes ignited. The slight explosion forces the gas following upwards in the sheath 6 downwards into the interior so that the amount of the carburetted mixture passing upwards in the sheath which is ignited is limited. Immediately thereafter the carburetted gas again rises and is ignited and so on. There is thus produced a continuous series of rapid ignitions of a certain quantity of carburetted

gas which gives the flame the desired flickering or intermittent quality.

The maintenance of lamps according to the invention consists simply in filling the lamp, trimming the wick from time to time and replacing it when consumed.

Flickering flame burners as herein described provided with a reservoir such as 4 can be located in any suitable lantern and as shown in the drawing (Figs. 6 and 7) this may take the form of a truncated square pyramid formed from bent sheet metal.

This lantern is fixed by means of a circular socket formed with an orifice and situated at the central part of the base. Into this orifice will pass a wood screw adapted then to screw into a thick plank for example. The door 15 of the lantern can be padlocked so as to prevent the theft of the lamp. If necessary, the lantern can be suspended by the handle 16. Under the cap there is a perforated sheet or a wire gauze for the purpose of preventing extinction by a strong wind. The lantern carries on its sides red light intensifiers or lenses 17 on which conventional signs can be painted or indicated for the purpose of indicating cross roads, dangerous traffic spots, and the like.

The consumption of the lamp when utilising petroleum as carburant is very low and duration of operation very long (minimum average: 50 hours for a wick of 25 mm. width with a litre of petroleum).

The invention can be applied to different types of lamps, lamps for yards, public works, various undertakings, railways and more especially for designating level crossings, cross roads, and everywhere where there exists inconvenience or danger for traffic.

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:—

1. A flickering-flame signal lamp adapted to employ liquid hydrocarbon fuel, including an incombustible sheath located around and extending above the burner to leave a free space between its interior surfaces and the burner and any portion of the wick extending above said burner, and means to regulate the entry of air into the said free space at the lower end of the sheath, for the purposes set forth.

2. A flickering-flame signal lamp operating with liquid hydrocarbon fuel as claimed in claim 1 in which the sheath is provided with apertures for the entry of air towards its lower end, and in which sliding shutter means are provided

to regulate the size of such air inlets, for the purposes set forth.

3. A flickering-flame signal lamp operating with liquid hydrocarbon fuel as claimed in claim 2 in which the burner and sheath are formed of flattened rectangular section and in which the air-regulating means is comprised by a stirrup member adapted to be adjustably clamped on the sheath, the said stirrup having cut-away portions for adjustable positioning with respect to the air-inlet apertures, all for the purposes set forth.

4. A flickering-flame signal lamp operating with liquid hydrocarbon fuel as claimed in the preceding claims in which the burner has in association therewith the usual wick-feeding mechanism, and in which a reservoir for fuel is associated with the burner, the unit formed by the reservoir, burner and

sheath being located in a casing of truncated square pyramidal form, such casing having a base with an aperture for the passage of securing means, transparent coloured glasses in opposite faces of said casing located in line with the flame, a door to the casing in one of the remaining sides, and means for securing the door, all for the purposes set forth.

5. Flickering-flame signal lamps operating with liquid hydrocarbon fuel constructed, operating and arranged substantially as herein described, or substantially as herein described and shown on the accompanying drawing.

Dated this 27th day of August, 1937.

BROWNE & CO.,

Agents for the Applicant,  
9, Warwick Court, Gray's Inn, London,  
W.C.1.

[This Drawing is a reproduction of the Original, on a reduced scale.]

