

Jan. 18, 1949.

D. B. BROWNE

2,459,261

FUEL LEVEL INDICATOR SYSTEM

Filed Feb. 2, 1946

FIG. 1.

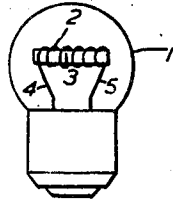
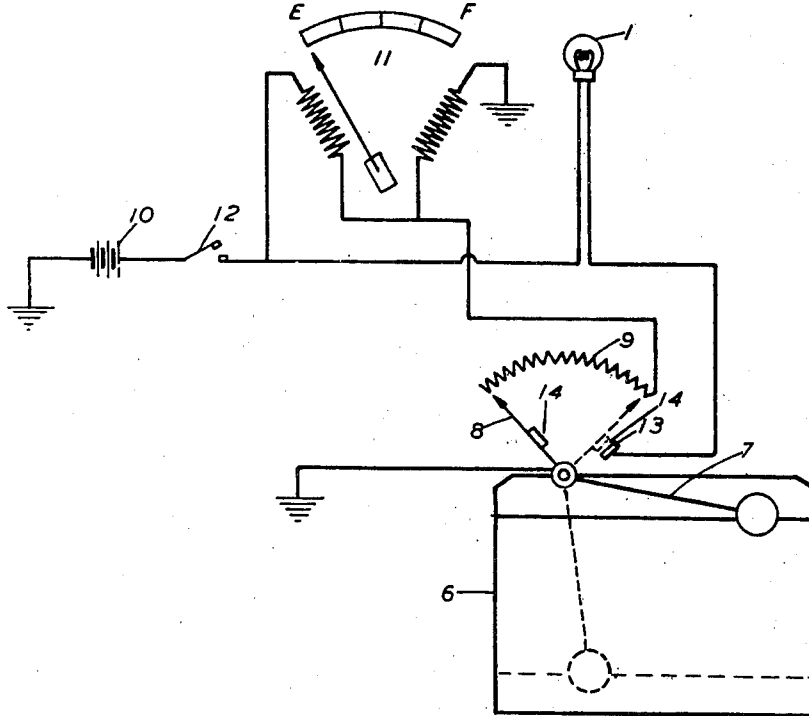


FIG. 2.



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UNITED STATES PATENT OFFICE

2,459,261

FUEL LEVEL INDICATOR SYSTEM

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Application February 2, 1946, Serial No. 645,219
In Great Britain February 15, 1945

3 Claims. (Cl. 177-311)

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This invention relates to electric lamps used as indicators.

Such lamps are often used to indicate a definite factor, such as temperature, pressure, quantity, flow and the like which is apt to fluctuate about a steady state condition.

It is undesirable that the lamp should flicker when the factor is in a fluctuating condition, but it should change when there is a definite change beyond the critical point. Any fluctuation is usually emphasised by the sensitiveness of the control device such as the thermostat, diaphragm, float or metering device, whatever is used. Any reduction in sensitivity involves likelihood of sluggishness of response or inability to keep within critical limits.

These difficulties are overcome by this invention according to which the filament is associated with a heat accumulator having a rate of dissipation approximately the same as the rate of heat generation of the filament under steady state conditions.

Use for this purpose can be made of a refractory material in contact with the filament such that the heat generated by the transient current due to fluctuations heats up the material but does not light up the filament.

Further features of the invention will be apparent from the following detailed description of one embodiment and one application thereof, reference being made to the accompanying drawings in which:

Figure 1 shows one form of electric lamp in accordance with the invention; and

Figure 2 shows diagrammatically an indicator system using a lamp according to the invention, for a fuel tank on a motor vehicle.

As shown in Figure 1 the lamp 1 has a filament 2 which is coiled around a cylinder 3 of heat dissipating material formed of ceramic material including a substantial percentage of refractory oxides. One suitable composition is as follows:

	Per cent
China clay-----	43
Ball clay-----	12
Glass-----	5
Synthetic sillimanite-----	40

Whatever mixture is chosen for this purpose will be such that there will be no dissociation, and consequent deposition on the glass, due to heat.

The filament supports 4, 5 are suitably strengthened to hold the material. If desired the filament can be partially embedded in it. With the requisite thermal capacity and dissipation the

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filament will not glow persistently until a sufficiently steady current flows.

In applying the invention as shown in Figure 2 to indicate a liquid quantity, for example, the minimum quantity of fuel in a fuel tank 6 of an internal combustion engine, the float 7 operates in the usual way an arm 8 controlling a variable resistance 9 in a circuit from battery 10 to ground through a galvanometer indicator 11 and the ignition switch 12. As the float 7 sinks, the arm 8 moves clockwise and decreases the amount of resistance 9 in the circuit, and accordingly the indicator 11 shows the fall in liquid level. As the liquid level falls to a critically empty level the arm 8 moves towards the dotted line position, closer to the fixed contact 13 in the circuit of lamp 1, until finally the spring contact 14 on arm 8 completes the circuit. Due to movement of the vehicle, the float 7 moves up and down and the contact is intermittent. Consequently the lamp 1 does not light up. When the liquid level falls such that movement does not affect the contact, a steady current flows and the lamp 1 gives indication that the critically low level has been reached.

In a normal system, as the liquid level approaches the critical value, its swirling normally causes an intermittent operation of the switch and consequently a flickering of the light. By partially or completely embedding or winding the lamp filament in or on a piece of refractory material of the requisite thermal capacity and dissipation, the filament will not glow persistently until a sufficiently steady current flows due to a steady state condition of liquid level.

It is clear that such a lamp can be used in any indicator installation adapted to indicate any of the factors above indicated.

I claim:

1. An electrical indicator system for a variable factor which is subject to fluctuations about a median quantity condition, comprising a device movable in accordance with said fluctuations, an electrical circuit whose continuity may be interrupted by said device in accordance with said fluctuations, and in said circuit an indicator lamp whose filament is in heat conductive relation with a heat dissipator such that the filament does not light up until said median quantity of said variable factor reaches a predetermined value.

2. An electrical indicator system for a fuel tank for an internal combustion engine comprising a float in said tank, an electric circuit, contacts in said circuit controlled and adapted to be closed by said float when a low fuel level is

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reached in said tank, and an electrical indicator lamp in said circuit said lamp having a filament and a heat dissipating mass in contact therewith such that the filament lights up only when said contacts are firmly and completely closed by said float.

3. In an electrical indicating system for a liquid level which is subject to fluctuations about a steady state condition, comprising a float movable in accordance with the fluctuations, an electrical circuit including an indicator lamp the continuity of which is determined by the position of said float and said indicator lamp having a filament in heat conductive relation with a heat dissipator of such thermo capacity that the filament does not light up until the median value of said fluctuation of the liquid level is below a predetermined position.

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