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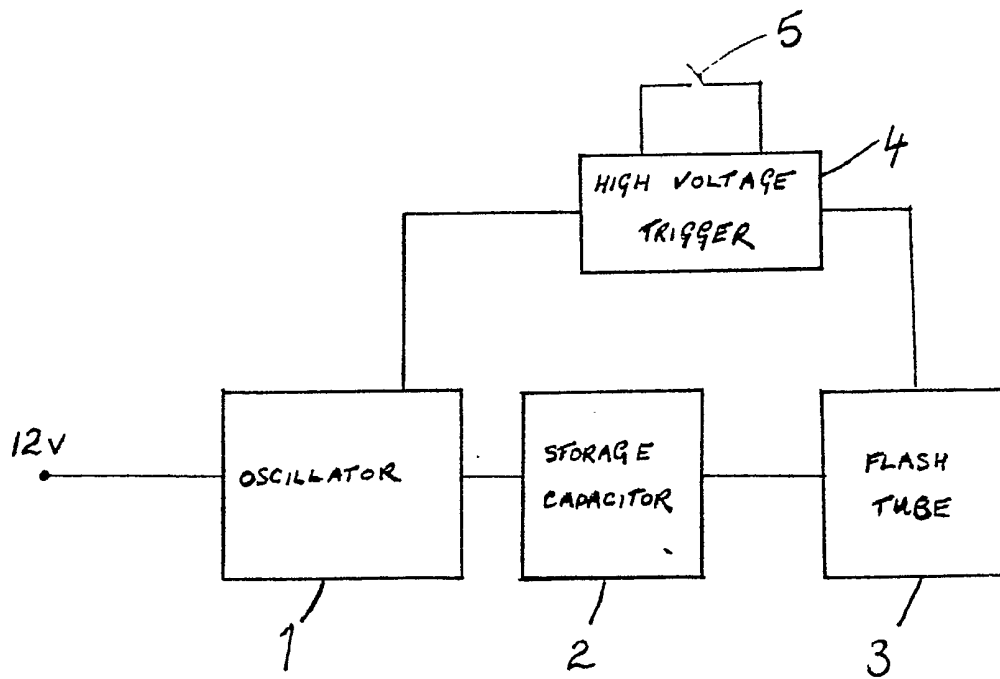
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(54) **Vehicle brake lamp**

(57) A vehicle brake lamp, intended to be used in conjunction with conventional brake pedal operated lamps, is adapted to produce a light pulse of high intensity and short duration in response to rapid vehicle deceleration. A flash tube is used to emit the pulse and is actuated by an inertia switch. The emitted flash alerts following drivers to a hard or emergency braking situation without dazzling them.



## SPECIFICATION

**Vehicle brake lamp**

5 This invention relates to a vehicle brake lamp.

Brake lamps are now installed as standard components on road vehicles. Usually two such lamps are mounted on the rear of the vehicle and they are illuminated to warn the drivers of following vehicles that the brakes are being applied. The lamps are operated by an electric switch which is actuated when the brake pedal is depressed, the lamps remaining illuminated as long as the brake pedal remains pressed down.

15 A disadvantage of the known brake lamps is that the warning signal they give is the same whether the brakes are being applied to slow the vehicle down gradually at a low rate of deceleration, or the brakes are being applied hard such as in an emergency situation. This can be a serious drawback, especially in heavy traffic conditions when there is a tendency for vehicles to be driven too close together, and brakes tend to be applied frequently to provide slight slowing down. In these conditions a driver may not instantly recognise that a vehicle travelling in front is being braked hard and as a result of the delay in reacting to that situation a collision may be unavoidable.

The present invention provides a solution to the above problem and broadly resides in a brake lamp for a vehicle which is adapted to emit a high intensity light-pulse of short duration in response to rapid deceleration of the vehicle.

The light pulse is similar to the flash produced by a photographic flash gun, it being of high intensity but of very short duration whereby other drivers will not be dazzled by it.

It is proposed that the brake lamp of the invention should be used in conjunction with the conventional brake lamps operated by the brake pedal, and it is not intended to replace them. The high intensity flash from the lamp of the invention will immediately alert drivers of following vehicles to the fact that a hard or emergency braking situation has arisen, giving better opportunity to take action to avoid a collision.

Stated more specifically, the invention provides a brake lamp comprising a high intensity light source, preferably a flash tube, and an inertia operated switch for energising the light source to emit a pulse of light when a vehicle on which the lamp is mounted undergoes deceleration at a rate consistent with hard or emergency braking.

The exact form of the inertia switch is unimportant and it can be mechanical, e.g. pendulum switch, electromechanical or a solid state device.

The lamp is preferably powered from the vehicle battery, but a separate power supply could be used. The light source is preferably located behind a coloured lens which may be red as for conventional brake lamps, although other colours could be used.

According to one embodiment the components of the lamp are all housed within a lamp casing. This is of particular advantage if the lamp is to be fitted as an accessory, since it is only necessary to mount the lamp on the vehicle and to connect it to the electrical

system. The lamp may also be fitted as original equipment, and in that case in particular the light source could be conveniently incorporated in a conventional brake lamp.

70 While it is expected that a single brake lamp designed to emit one pulse per actuation will provide an adequate warning signal, a vehicle could be fitted with more than one lamp, such as a matched pair located one at either side of the vehicle, and the lamp or lamps could be adapted to emit a plurality of successive pulses when activated.

75 An electric circuit for a brake lamp embodying the invention is shown schematically in the accompanying drawing and will now be described in detail.

80 A 12v DC oscillator 1 has an output connected to a storage capacitor 2 of 500  $\mu$ F - 1000 $\mu$ F. Connected across the capacitor 2 is a Xenon strobe tube 3. When the oscillator is connected to a 12 v DC supply, a vehicle battery for example, it delivers 350 v DC to the capacitor 2. A second output from the oscillator is connected to a high voltage trigger 4 for delivering a voltage of e.g. 150 v to the trigger. An inertia switch 5 is connected to the trigger 4 and the output of the trigger is connected to the flash tube 3.

90 When the inertia switch 5 closes, due to deceleration of a vehicle on which the lamp is mounted above a predetermined rate, the trigger 4 delivers a high voltage pulse (3-4 Kv) to the flash tube to ionise the gas in it. This enables the capacitor 2 to discharge through the tube 3, as a result of which the tube emits a pulse of light of high intensity, but short duration. The light pulse will attract the attention of the driver of a following vehicle enabling him to take appropriate action at the earliest opportunity.

100 The brake lamp of the invention will provide an extra degree of safety to motoring in general and may be of even greater benefit when visibility is restricted, such as due to adverse weather conditions.

## CLAIMS

110 1. A vehicle brake lamp comprising a light source and means for energising the light source in response to rapid deceleration of the vehicle to emit a light pulse of high intensity and short duration.

2. A vehicle brake lamp as claimed in claim 1, wherein the light source comprises a flash tube.

115 3. A vehicle brake lamp as claimed in claims 1 or 2, wherein the energising means comprises an inertia switch.

4. A vehicle brake lamp as claimed in claims 2 and 3, wherein the energising means includes a storage capacitor coupled to the flash tube and high voltage trigger means coupled to the flash tube, the inertia switch being operable to actuate the trigger means to emit a high voltage pulse for ionising the gas in the flash tube and thereby to enable the capacitor to discharge through the flash tube.

120 5. A vehicle brake lamp according to any one of the preceding claims, wherein the light source and energising means are housed within a casing, whereby the lamp is mountable as a unit on a vehicle.

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6. A vehicle brake lamp according to any one of the preceding claims, wherein the light source is located behind a coloured lens and said light pulse is transmitted through the lens.
- 5 7. A vehicle brake lamp substantially as herein described.
8. A vehicle comprising main brake lamps arranged to be illuminated in direct response to depression of a brake pedal, and at least one
- 10 auxiliary brake lamp as defined in any one of the preceding claims.