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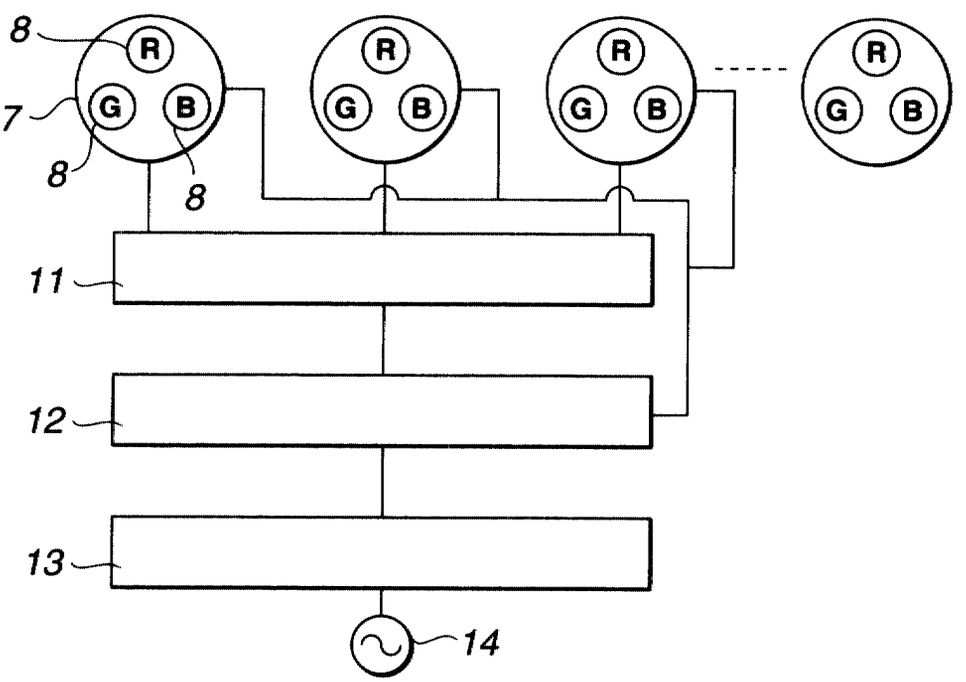
(54) Traffic signal

(57) The disclosed traffic signal comprises a number of three-in-one type LEDs housed in a transparent or translucent cover, which are connected to a current controller. The current controller is connected to a power source via a timer so that predetermined working current is supplied to a group of LEDs in a timed intervals controlled by means of a switch controller in order for the group of LEDs to emit monochromic light. The LEDs are grouped according to the light colors they emit. The traffic light is, an one hand, compact and easy to install, easy to assemble, easy to maintain and cost-saving. On the other hand, it has a good visibility to oncoming drivers which contributes to orderly traffic flows.

FIG.2



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Description

[0001] The disclosed invention pertains to traffic signals such as those set up at intersections.

[0002] As is well known, as traffic becomes heavier, traffic congestion becomes a serious problem. As the number of passenger cars and trucks an roads sharply increases, more traffic accidents.

[0003] In order to solve the problem, every intersection is provided with traffic signals having alternatively energized lamps of different colors, i.e. red light as stop sign, yellow light as caution, and green light as go straight.

[0004] As shown in Fig. 3, the traffic signal of this type has a red- , a green- , and a yellow lamp each lamp being horizontally or vertically mounted an a rectangular plate 1. Fig. 3 (A) shows a horizontal type and Fig. 3 (B) shows a vertical type and Fig.3 (C) shows a wire-hung type.

[0005] In use, the traffic signal of this type is supported by means of a stay (6) or of wire (5).

[0006] However, the supporting means of this type not only involves complicated initial setting work, but also pains taking jobs in case of traffic accident, such as repair, inspection, maintenance work. Besides this troublesome work, the visibility of the traffic light is often lessened by surrounding buildings, show windows and neon signs, which impose limitations on setting conditions for traffic signals.

[0007] Another drawback is that the traffic requires a traffic signal for each direction, which means at least two signals must be set up at an intersection, thus necessitating more construction work and cost.

[0008] Another drawback of the traffic signal of this type is, that each light is alternatively turned on, i.e. the red lamp for "stop"sign, the green lamp for "go", and the yellow lamp for "caution" which leads to low operational efficiency.

[0009] Thus, the object of present invention is to propose an improved traffic signal which is easy to set, having single lamp and much better visibility which overcomes the drawbacks mentioned above of the known traffic signals having three alternatively energized lamps.

[0010] The present invention provides a single lamp traffic signal as defined in any of appended claims.

[0011] The present invention will become apparent from the following detailed description and the appended claims with reference to the accompanying drawings.

[0012] Fig. 1 shows a cover of the traffic signal of present invention.

[0013] Fig. 2 shows a diagrammatic view of the function of the invention.

[0014] Fig. 3 shows a schematic view of a traffic signal of known type. Fig. 3 (A) shows the horizontal type. Fig. 3 (B) shows the vertical type. Fig. 3 (C) shows the wire-hung type.

[0015] Preferred embodiments of the invention will be explained hereafter referring to Fig. 1 and 2, in which same numerals are employed to denote similar parts shown in Fig. 3.

[0016] In an embodiment shown in Fig. 1 and 2, the numeral 7 denotes a cover made with transparent or translucent glass or plastics. The cover of the embodiment has a round shape inside of which are contained a number of light-emitting diode or LED 8 of newly invented three-in-one type, i.e. a set of three diodes each of them being capable of emitting light of different color corresponding to a predetermined bias voltage for each color.

[0017] The lead wires of these diodes are connected in parallel to an electric current controller 11 capable of supplying electric current of different voltage corresponding to the bias voltage for different LED 8.

[0018] The current controller 11 is connected to a switching controller 12 capable of switching the circuits for LED emitting light of different color.

[0019] The switching controller 12 is then connected to a timer 13 capable of switching on or off the circuit for emitting red light for "stop", green light for "go", or yellow light for "caution". The timer is then connected to a power source 14.

[0020] The tone of each color i.e. green (G) or yellow (Y) can vary within the limitations set forth by The Traffic Safety Association.

[0021] The cover 7 may be of a round shape as shown in Fig. 1 or of another shape such as an oval shape.

[0022] The cover is capable of deflecting light from unintended direction to improve the visibility of traffic light for oncoming drivers.

[0023] In operation, the traffic signal of the invention functions as follows.

[0024] The controller 11 supplies working electric current from the power source 14 via a timer 13 and a switching controller 12 to a number of LED housed in the cover 7 energizing the LED.

[0025] The LED, then corresponding to the working current, emits red light, green-light, or yellow light toward oncoming traffic, thus ensuring the visibility of the traffic light.

[0026] The timer 13 initiates counting time. Upon completion of previous time, the timer 13 initiates another counting operation during the time when the controller 12 supplies working current in order for the LEDs to emit light, e.g. green light for "go" sign to secure orderly traffic in well known manners. The "go" sign is clearly visible.

[0027] The controller 11, switching controller 12 and the timer 13 are of the type easy to design at the time of the invention by those skilled in the art.

[0028] The traffic lamp using LEDs 8 may be provided with direction lamps below the lamps for regulating traffic in well known manners whose operational time is also controlled by the timer 13. The cover 7 allows monochromatic light emitted by the LEDs 8 to go through toward oncoming traffic, thus the entire cover 7 glitters in monochromatic color to regulate traffic.

[0029] Preferred embodiments are not limited to the above mentioned embodiment. The traffic lamp may be used for rail road signs.

[0030] The cover shape is easy to design, e.g. round, triangular, rectangular or ball shape.

[0031] Instead of using three-in-one type LEDs, a set of three LEDs can be used, each of which emits light of different color, red, green or yellow light and are separately placed inside the cover 7.

[0032] The lamp of present invention can be used as stage lighting or other lighting apparatus.

[0033] Certain races have high incidents of color-blindness or partial color-blindness. A person who is color-blind or partially color-blind is given a driver's license under certain test conditions. These conditions include illumination patterns for red- and green-light. These illumination patterns are discernible to color-blind people. But this is not the case with yellow light.

[0034] In order to secure discernibility to the color blind, present invention employs different illumination patterns for different monochromatic light; for example, a round pattern for red , a circle for green and 3-spot pattern for yellow.

[0035] From foregoing description, it is easily understood that the traffic lamp of present invention is easy to install and easy to find a place to install because of its simple structure of three-in-one type LED and because of its high visibility, it is also easy to maintain, and cost-saving because it requires little maintenance work.

[0036] In sharp contrast to the traffic lamps of-known types which involve a plurality of lamps of different light juxtaposed to one another and a great volume, present invention comprises a transparent cover and a number of newly invented three-in-one type LEDs which are controlled by a controller for supplying working current which in turn controls electric current supplied from power source via a timer and a switching controller, thus enabling timed emission of monochromatic light by the LEDs in the cover as a result of a timed supply of the working current, facilitating installation and maintenance or replacement, cutting cost and eventually relieving traffic congestion.

[0037] Thus present invention provides a single lamp traffic signal comprising monochromatic light-emitting-LEDs which emit light corresponding to a working current supplied through a time and controlled by a current controller.

[0038] A number of LEDs of present invention is capable of emitting light only in the direction of oncoming traffic, thus combined with the opposite traffic signal, improving traffic safety.

[0039] Another advantage of present invention is that it is secure in operation as a traffic signal and free from malfunction due to a number of different kind of three-in-one type LEDs housed in a cover which emit monochromatic light corresponding to electric current supplied by a controller via a switching controller.

[0040] As described above, the disclosed traffic signal comprises a number of three-in-one type LEDs housed in a transparent or translucent cover, which are connected to a current controller. The current controller is connected to a power source via a timer so that predetermined working current is supplied to a group of LEDs in a timed intervals controlled by means of a switch controller in order for the group of LEDs to emit monochromic light. The LEDs are grouped according to the light colors they emit. The traffic light is, an one hand, compact and easy to install, easy to assemble, easy to maintain and cost-saving. On the other hand, it has a good visibility to oncoming drivers which contributes to orderly traffic flows.

The disclosed traffic signal comprises a number of three-in-one type LEDs housed in a transparent or translucent cover, which are connected to a current controller. The current controller is connected to a power source via a timer so that predetermined working current is supplied to a group of LEDs in a timed intervals controlled by means of a switch controller in order for the group of LEDs to emit monochromic light. The LEDs are grouped according to the light colors they emit. The traffic light is, an one hand, compact and easy to install, easy to assemble, easy to maintain and cost-saving. On the other hand, it has a good visibility to oncoming drivers which contributes to orderly traffic flows.

Claims

1. A single lamp traffic signal having a single cover housing a single lamp sequentially emitting light of different color, wherein a number of grouped LEDs housed in said cover are connected to a current controller, by means of lead wire for each group, said current controller being connected via a switching controller to a timer.

2. A single lamp traffic signal as set forth in claim 1, wherein said current controller has a set of predetermined electric currents.

3. A single lamp traffic signal as set forth in claim 1 or 2, wherein said LEDs are of three-in-one type.

4. A single lamp traffic signal as set forth in claim 1 or 2, wherein each of said group has a number of LEDs grouped and arranged according to the color of the light emitted by the LEDs.

5. A single lamp traffic signal according to any preceding claim, wherein said switching controller turns on (off) said grouped LEDs on the basis of group.

FIG.1

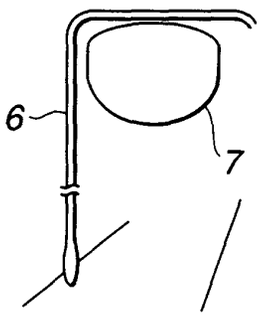


FIG.2

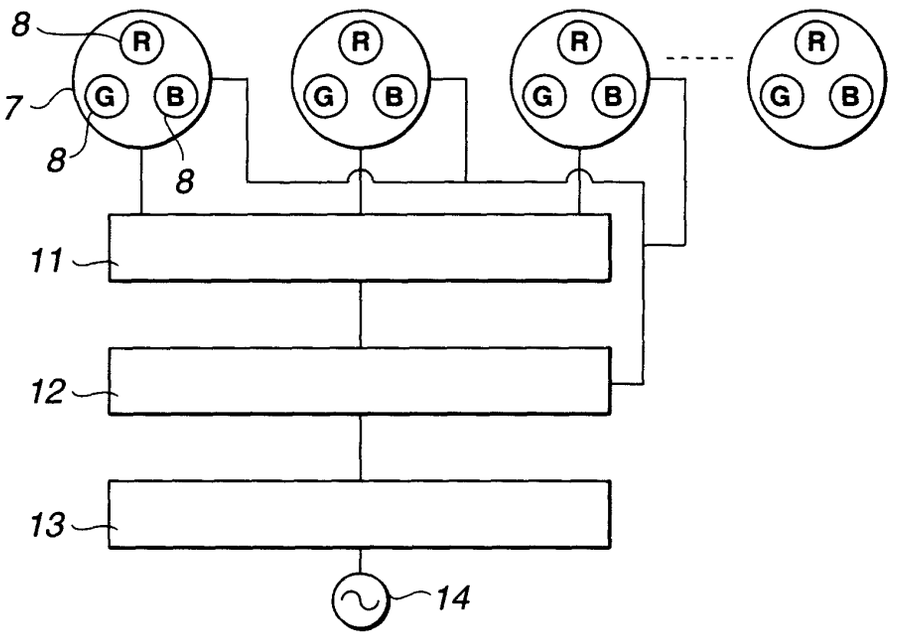
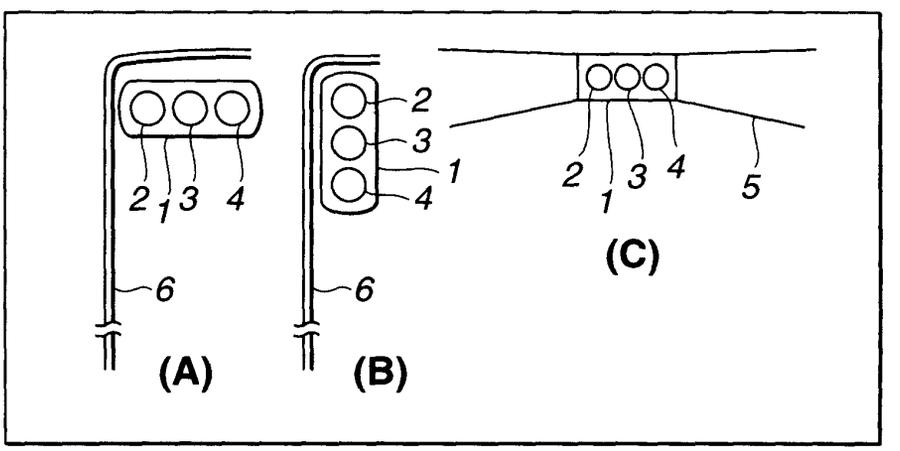


FIG.3



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 11 5865

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 05, 31 May 1999 (1999-05-31) & JP 11 039593 A (TOYO DENKI KK), 12 February 1999 (1999-02-12)	1	G08G1/095
Y	* abstract *	2-5	

Y	US 3 875 456 A (KANO TSUYOSHI ET AL) 1 April 1975 (1975-04-01) * figure 1 * * column 1, line 10-60 * * column 3, line 30-40 * * column 4, line 35-45 * * column 5, line 1-10,45-60 *	2	

Y	US 4 656 398 A (MICHAEL ANTHONY J ET AL) 7 April 1987 (1987-04-07) * figures 4,12,14,15 * * column 1, line 50-65 * * column 6, line 50-60 * * column 7, line 20-35,65-70 * * column 8, line 25-70 * * column 9, line 1-10,45-70 * * column 10, line 1-5 *	3-5	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)
G08G
G09G
F21K
F21V
F21Q
B60Q
B61L
H01L
E01F
G09F
F21P
H05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	14 February 2001	Coffa, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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& : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 11 5865

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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14-02-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82