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(54) Light source module

(57) The light source module provided by the present invention includes a base plate (1) and a plurality of LED lights (101, 102, 103) arranged on the base plate. These LED lights are distributed on the base plate in such manner that all of the light centers of the LED lights define together a triangle shape. An angle of 50-70 degrees is defined between a LED light and two adjacent LED lights. The present invention has many advantages. For example, because the LED lights are distributed in a triangle arrangement, the dark regions are reduced effectively. Moreover, alternate dark and bright strips are eliminated. In addition, base plates can be assembled quickly by means of connective members (105,107).

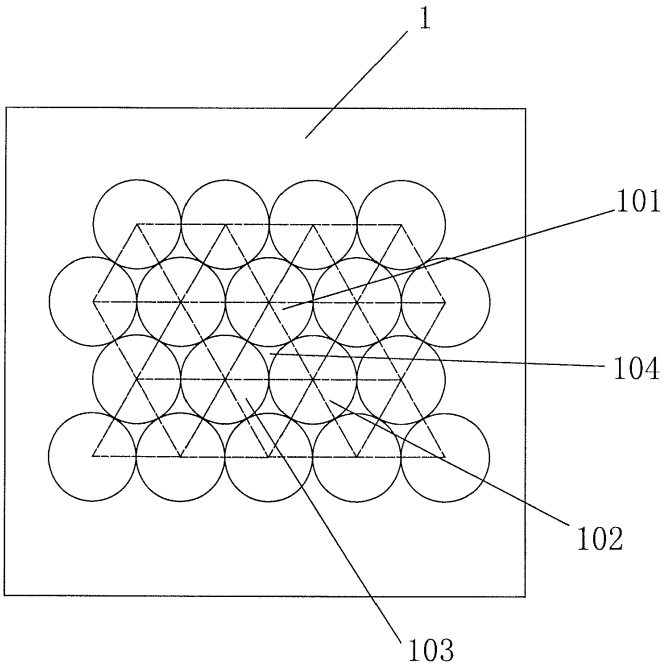

Fig. 7

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Description

Field of the Invention

[0001] The invention relates to an energy-saving light source module and more particularly, relates to a light source module comprising a plurality of LED lights.

Background

[0002] It is a major means to improve and promote the reputation and brands of a company by using advertisement lamp-boxes. Conventional advertisement lamp-boxes appear in many public areas such as bus stations, harbors and airports.

[0003] The light intensity of a tube inside the lamp-box gets worse and worse when the distance increases. As a result, dark and bright light strips are easily shown on surfaces of the lamp-box in an alternate manner. To eliminate these alternately shown light strips, the number and light intensity of the tubes are necessarily increased, hence resulting in significant consumption of energy and increase of the cost. With the development of technologies, energy-saving LED lights are utilized. A plurality of LED lights are installed together to replace above conventional light tubes. However, these newly emerging LED lights still fail to eliminate alternate light strips, as shown in figure 1. Attempts have been made to overcome the above problem by arranging the LED lights so that they have a cellular or square arrangement (as shown in figures 3 and 5). These cellular or square arrangements failed to completely overcome the above issue and further resulted in other drawbacks such as large areas of dark strip (as shown in figures 2, 4 and 6).

SUMMARY OF THE INVENTION

[0004] To overcome the above drawbacks of the prior art, a light source module is provided which has minimum area of dark region, eliminates the alternate dark and bright strips, and is easy to be assembled together.

[0005] The light source module provided by the present invention includes a base plate and a plurality of LED lights arranged on the base plate. These LED lights are distributed on the base plate in such manner that all of the light centers of the LED lights define together a triangle shape. An angle of 50-70 degrees is defined between a LED light and two adjacent LED lights.

[0006] Preferably, the above angle is 60 degrees such that an equilateral triangle is formed.

[0007] These LED lights are distributed so that they have identical distances to one another.

[0008] The effective light coverage between two LED lights takes on a circular shape and these coverages are tangential to one another at peripheries thereof. A virtual light source is formed between two adjacent LED lights and defines a dark region of a shape similar to a triangle.

[0009] The base plate has a first and second connective members provided on its undersurface. The first connective member has a first insertion pin provided thereon. The second connective member has a second insertion pin equipped thereon. The first and second insertion pins are orientated in opposite directions.

[0010] The first and second insertion pins are inserted into chambers defined respectively in the first and second connective members so as to assemble the base plates together. The sidewalls of the first and second insertion pins are pressed against each other in order to limit the position.

[0011] The present invention has many advantages. For example, because the LED lights are distributed in a triangle arrangement, the dark regions are reduced effectively. Moreover, alternate dark and bright strips are eliminated. In addition, the base plates can be assembled quickly by means of the connective members.

[0012] Other advantages and novel features will be drawn from the following detailed description of embodiments with reference to the attached drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Figure 1 shows a structural view of a prior art light source.

[0014] Figure 2 shows schematically the dark regions of the light source of figure 1.

[0015] Figure 3 shows another structural view of a prior art light source.

[0016] Figure 4 shows schematically the dark regions of the light source of figure 3.

[0017] Figure 5 shows a further structural view of a prior art light source.

[0018] Figure 6 shows schematically the dark regions of the light source of figure 5.

[0019] Figure 7 shows a light source according to the present invention.

[0020] Figure 8 shows schematically the dark regions of the light source of figure 7.

[0021] Figures 9 and 10 illustrate a process of assembling a plurality of base plates according to the invention.

DETAILED DESCRIPTION

[0022] Various embodiments of the invention will now be discussed in conjunction with the drawings.

[0023] As shown in figure 7, a light source module according to one embodiment of the invention includes a base plate 1 and a plurality of LED lights 101-103 installed on the base plate 1. The LED lights 101-103 are arranged in such manner that the light source centers of these LED lights 101-103 define collectively a triangle shape. An angle of 50-70 degrees is defined between each LED light and two adjacent LED lights.

[0024] The effective light coverages among the LED lights 101-103 takes on a circular shape and these coverages are tangential to one another at peripheries thereof. A virtual light source is formed among the LED lights

101-103 and defines a dark region 104 of a shape similar to a triangle.

[0025] Preferably, the angles defined among these LED lights 101-103 are 60 degrees such that an equilateral triangle is defined.

[0026] These LED lights are distributed so that they have identical distances to one another.

[0027] As shown in figures 9-10, the base plate 1 has a first and second connective members 105 and 107 provided on its undersurface. The first connective member 105 has a first insertion pin 106 provided thereon. The second connective member 107 has a second insertion pin 108 equipped thereon. The first and second insertion pins 106 and 108 are orientated in opposite directions.

[0028] The first and second insertion pins 106, 108 are inserted into chambers defined respectively in the first and second connective members 105, 107 so as to assemble the base plates 1 together. The sidewalls of the first and second insertion pins 106, 108 are pressed against each other in order to limit the position.

[0029] As shown in figure 8, the dark region 104 is of a triangle shape when these LED lights are lit. Clearly, the area of the dark region 104 is significantly smaller than that of the LED lights with a cellular arrangment or rectangular arrangement.

[0030] The base plates 1 may be assembled effectively using the above connective members 105, 107 so as to form a large group of base plates.

Claims

1. A light source module, comprising a base plate (1) and a plurality of LED lights (101, 102, 103) arranged on the base plate (1), wherein these LED lights (101, 102, 103) are distributed on the base plate (1) in such manner that all of the light centers of the LED lights (101, 102, 103) define together a triangle shape, and an angle of 50-70 degrees is defined between a LED light and two adjacent LED lights.

2. The light source module as claimed in claim 1, wherein the angle is 60 degrees such that an equilateral triangle is formed.

3. The light source module as claimed in claim 2, wherein the LED lights are distributed so that they have identical distances to one another.

4. The light source module as claimed in claim 3, wherein the effective light coverages among the LED lights (101, 102, 103) takes on a circular shape and these coverages are tangential to one another at peripheries thereof; and a virtual light source is formed between two adjacent LED lights and defines a dark region (104) of a shape similar to a triangle.

5. The light source module as claimed in claim 1, 2, 3, or 4, wherein the base plate (1) has a first and second connective members (105, 107) provided on its undersurface; the first connective member (105) has a first insertion pin (106) provided thereon; while the second connective member (107) has a second insertion pin (108) equipped thereon; and the first and second insertion pins (106, 108) are orientated in opposite directions.

6. The light source module as claimed in claim 5, wherein the first and second insertion pins (106, 108) are inserted into chambers defined respectively in the first and second connective members (105, 107) so as to assemble the base plates (1) together; and the sidewalls of the first and second insertion pins (106, 108) are pressed against each other in order to limit the position.

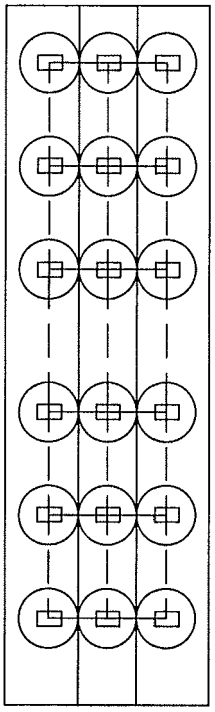

Fig. 1

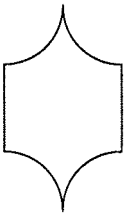

Fig. 2

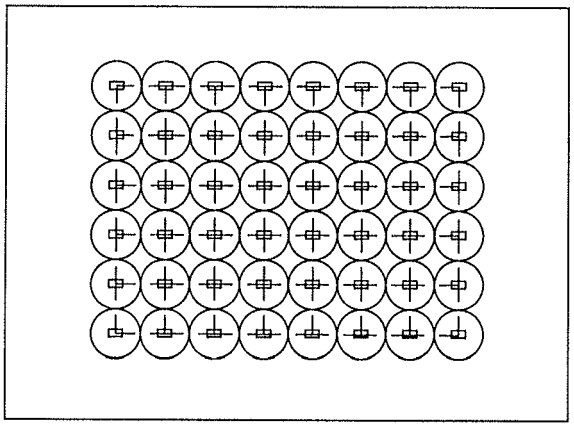

Fig. 3

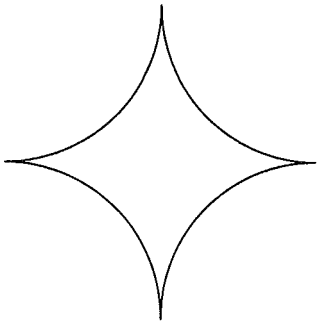

Fig. 4

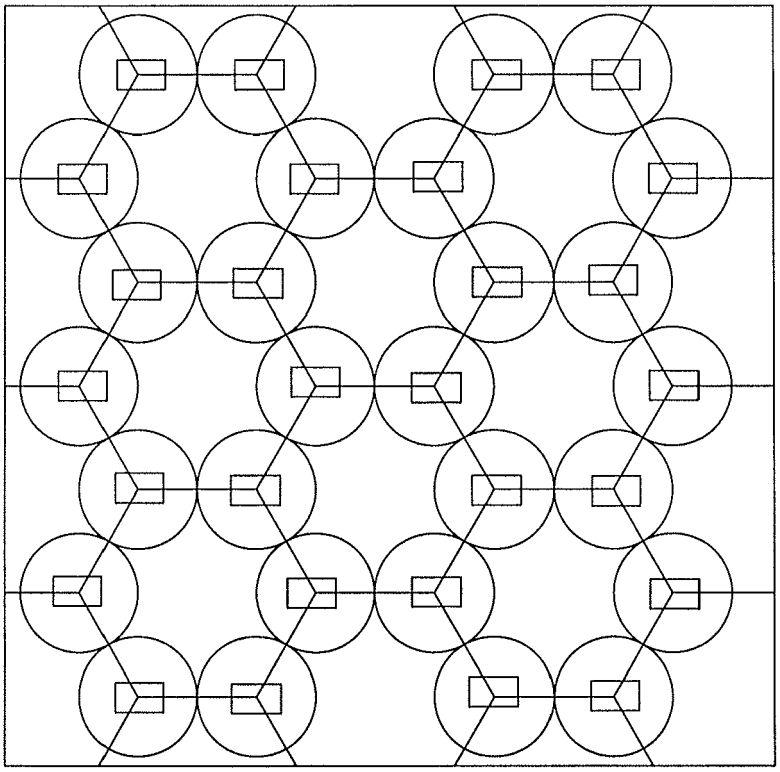

Fig. 5

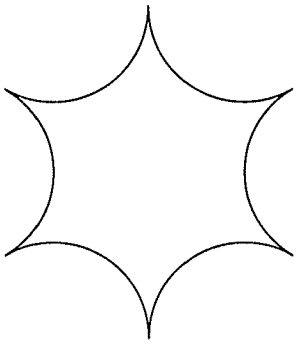

Fig. 6

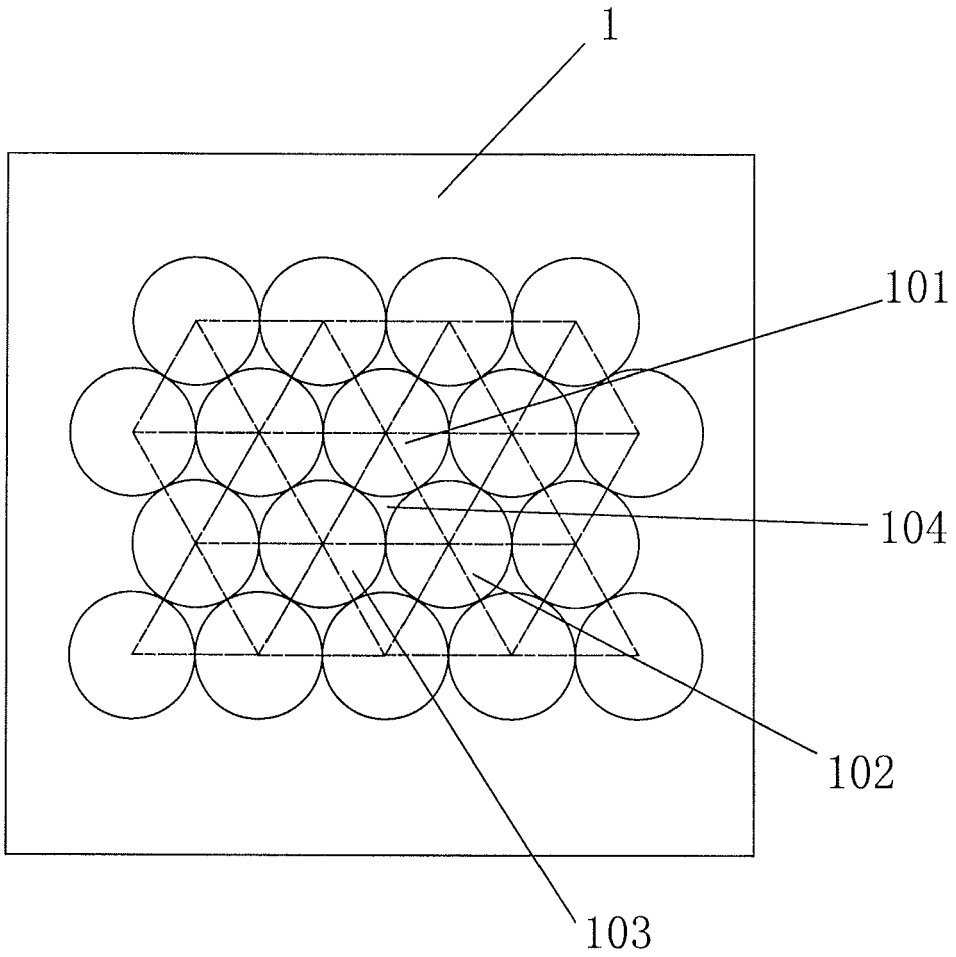

Fig. 7

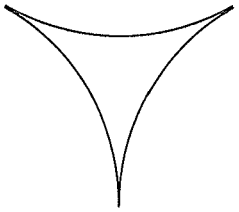

Fig. 8

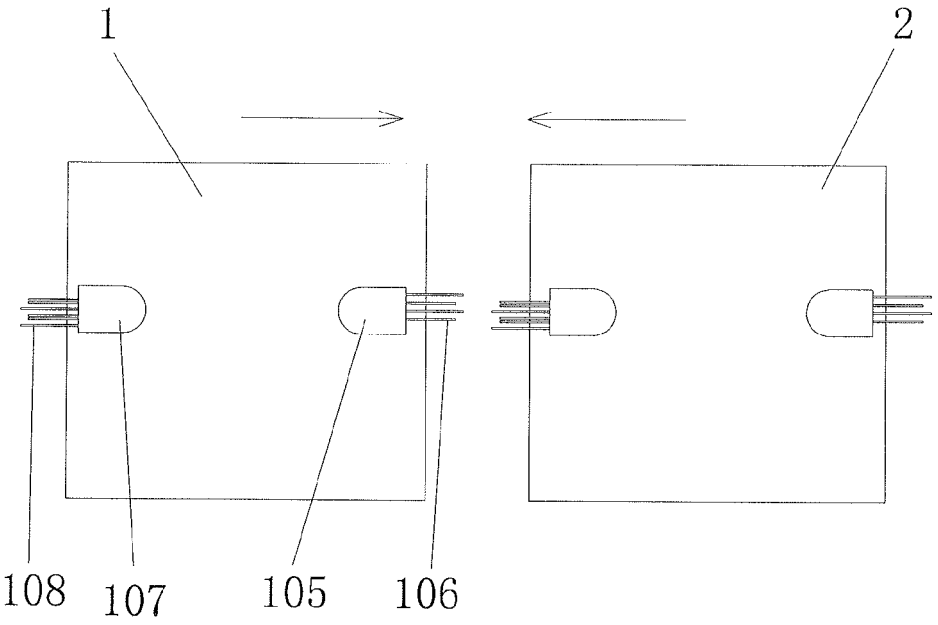

Fig. 9

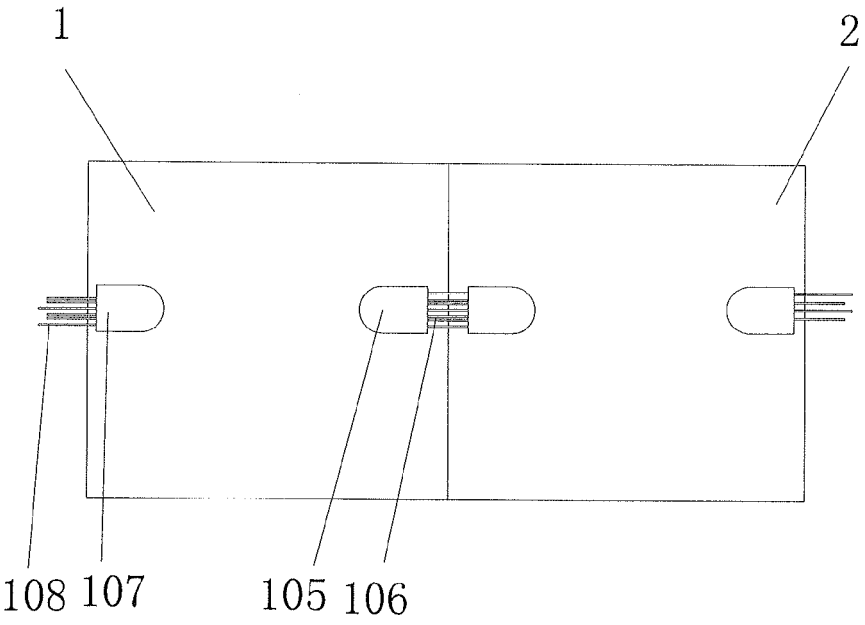

Fig. 10