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Lamp shade structure for enhancing luminous efficiency

Field of the invention

- 5 This invention relates to a lamp shade structure for enhancing luminous efficiency, and it specifically relates to a lamp shade structure that can generate wide angle, high luminosity, high light uniformity and far-reaching illumination characteristic.

10 Background of the invention

Due to the progress in technology, modern people can have optical source through lighting equipment in the night so that people can perform any activity freely in the night. However, there are many types of lighting equipment, for
15 example, road lamp, car lamp, desktop lamp and flash light, etc., which can provide bright and safe environment for people, under different environments, to walk and operate in the night or in the dark site.

Generally, lighting equipment usually contains luminous body and lamp shade. The use of lamp shade, in addition protecting luminous body, can reflect the light
20 source emitted by luminous body so as to enhance the luminosity of the light projected by luminous body; currently, lamp shade is usually of an arc concave surface, when luminous body emits light, the back-going light as emitted by luminous body will project on the arc concave surface, then the arc concave surface will guide the light towards the front side, hence, high luminous intensity
25 can be obtained; furthermore, for the current lamp shade, mirror-like thin film is usually coated on the arc concave surface so as to enhance the reflection effect of lamp shade; however, the coated thin film of the lamp shade is usually expensive, it is thus very difficult to be in widespread use, hence, some people try to form square flake shape arranged mark on the arc concave surface of the
30 lamp shade, in other words, a plurality of reflector surfaces are formed on the arc concave surface of the lamp shade, and through the design of a plurality of

reflector surfaces, it is hoped that the light reflection density can be enhanced so that the effect of higher luminous intensity can be achieved.

However, for the mark formed by the square flakes, since the square flake is only of pure plane, hence, for any light emitted by luminous body, after its
5 projection on the square flake, the reflected light will be only of single angle; therefore, it has only limited effect in enhancing the reflection density and uniformity effect of the light, hence, in the real application, it still has drawbacks such as low luminosity and bad light illumination power, hence, there is still large room for improvement.

10 Therefore, aiming at the design drawbacks of the current lamp shade, the inventor of this patent, using the manufacturing and design experience and knowledge in the related fields for many years and through innovative thinking, has proposed the current patent to improve the drawbacks of the current lamp shade.

15 Summary of the invention

This invention relates to a lamp shade structure for enhancing luminous efficiency, and its main objective is to provide lamp shade structure of lighting effect of wide angle, high luminosity, high light uniformity and far-reaching illumination characteristic.

20 In order to achieve the above embodiment objective, a lamp shade structure for enhancing luminous efficiency has thus been invented in this patent. First, it is installed with main body of lamp shade, meanwhile, on the main body of lamp shade, it is installed with arc concave shape reflector surface, meanwhile, the arc concave reflector surface is made to form front and rear reflector surface and
25 left and right reflector surface that are installed oppositely; moreover, at the center of the front and rear reflector surface, protruding ridge trail is formed, meanwhile, it starts from the ridges trail and descends obliquely towards both

sides, hence, oblique surfaces are formed at both sides of the ridge trail; in addition, the left and right reflector surfaces are installed with several protruding lines in certain interval.

5 The lamp shade structure as mentioned above for enhancing luminous efficiency wherein the two oblique surfaces as possessed by front and rear reflector surfaces of the main body of the lamp shade are further installed with a plurality of reflection grains.

10 The lamp shade structure as mentioned above for enhancing luminous efficiency wherein a plurality of reflection grains on two oblique surfaces possessed by the front and rear reflector surfaces of the main body of the lamp shade are installed in correspondence arrangement way.

15 The lamp shade structure as mentioned above for enhancing luminous efficiency wherein several reflection grains are installed on the interval formed by respective protruding line of the left and right reflector surfaces of the main body of the lamp shade.

The lamp shade structure as mentioned above for enhancing luminous efficiency wherein several reflection grains in each interval of the left and right reflector surfaces of the main body of the lamp shade are installed in interleaved arrangement way.

20 The lamp shade structure as mentioned above for enhancing luminous efficiency wherein all flat bottom surface is formed on the central part formed by left and right reflector surface and front and rear reflector surface of the arc concave reflector surface of the main body of the lamp shade, meanwhile, on the bottom surface, it is installed with several reflection grains, and there is through hole in
25 the bottom surface.

Therefore, through the design of oblique surface in the front and rear reflector surface, we can then let the light diverge in large angle towards the front and rear side of the main body of the lamp shade; in addition, through several protruding lines installed on left and right reflector surfaces, light emitted by luminous body can then be reflected by protruding lines to form gradually expanded and down-emitting ray; furthermore, through the reflection of reflection grain, high density light can be generated, through the use of this lamp shade structure, the lighting effect of wide angle, high luminosity, high light uniformity and far-reaching illumination characteristic can then be achieved.

10 Brief description of the figures

Figure 1: A stereo drawing of this invention.

Figure 2: The partial enlargement drawing of the front and rear reflector surface of this invention.

15 Figure 3: The partial enlargement drawing of the left and right reflector surface of this invention.

Symbol description of the main components

(1) Main body of lamp shade	(11) Reflector surface
(111) Front reflector surface	(112)Rear reflector surface
(113) Left reflector surface	(114) Right reflector surface
20 (115) Bottom surface	(116) Through hole
(2) Ridge trail	(21) Oblique surface
(3) Reflection grain	(4) Protruding line

(41) Interval

(5) Luminous body

Detailed description of the preferred embodiment

Moreover, in order to disclose the technical means and the effect it can reach of this invention more completely and clearly, the following descriptions are provided, please refer to the disclosed drawing and drawing number together.

First, please refer to figure 1, which is the lamp shade structure of this invention for enhancing luminous efficiency. It has a main body of lamp shade (1) with opened end installed at one and closed end installed at another end, meanwhile, its internal side is hollow; furthermore, arc concave shape reflector surface (11) is formed on the internal surface of the closed end of the main body of lamp shade (1); moreover, on the arc concave shape reflector surface (11), it is formed with oppositely installed front and rear reflector surfaces (111) and (112) and left and right reflector surfaces (113) and (114), and the flat bottom surface (115) that is located at the center of the front and rear reflector surfaces (111) and (112) and left and right reflector surfaces (113) and (114); meanwhile, protruding ridge trail (2) is formed at the center of the front and rear reflector surfaces (111) and (112); moreover, the front and rear reflector surfaces (111) and (112) will, start from ridge trail (2), descend obliquely towards both sides, and oblique surface (21) will then be formed at both sides of ridge trail (2); furthermore, on the front and rear reflector surfaces (111) and (112), it is installed with a plurality of reflection grains (3), and the reflection grain (3) is installed in correspondence arrangement way 【as shown in figure 2】; moreover, on the left and right reflector surfaces (113) and (114), it is installed several protruding lines (4) that are installed in interval way; in the meantime, at each interval (41) of each protruding line (4), it is installed with a plurality of reflection grains (3); furthermore, the plurality of reflection grains (3) are arranged in interleaved way 【as shown in figure 3】 ; finally, at the bottom surface (115), it is

installed with reflection grains (3) in opposite arrangement way; besides, at the center of the bottom surface (115), it is installed with through hole (116).

Moreover, when it is utilized and embodied, please refer to figure 1 again, in the figure, luminous body (5) is installed within the through hole (116) of the main body of lamp shade (1) so that luminous body (5) is located within the reflector surface (11) of the main body of lamp shade (1); furthermore, when luminous body (5) is activated, at this moment, light emitted by luminous body (5) will be projected on oblique surface (21) and its reflection grains (3) at both sides of the protruding ridge trail (2) at the center of front and rear reflector surfaces (111) and (112), and reflection grain(3) installed at the protruding line (4) and its interval (41) of the left and right reflector surfaces (113) and (114), and the reflection grain (3) installed at bottom surface (115).

Therefore, light projected on two oblique surfaces (21) of the front and rear reflector surfaces (111) and (112) of the main body of lamp shade (1) will enlarge the wide angle emitting effect of the light of the luminous body (5) towards the front and rear side of the opened end of the main body of lamp shade (1); in addition, light projected on the protruding line (4) of the left and right reflector surfaces (113) and (114) of the main body of lamp shade (1) will follow the arc surface of the main body of the lamp shade (1) to form gradually expanded and down-emitting ray towards the left and right side of the opened end of the main body of lamp shade (1); that is, projection effectiveness of wide angle and far-reaching illumination characteristic can then be reached; furthermore, light projected on reflection grain (3) will follow the curved surface of reflection grain (3) to generate multiple angle reflected ray; moreover, alternate and forward-and-backward reflection will be seen within the arc concave shape reflector surface (11) of the main body of lamp shade (1) to generate high density ray, and the luminosity and uniformity of the light emitted by luminous body (5) will then be enhanced. Therefore, through the use of lamp shade design of this invention, ray of wide angle, high luminosity, high light

uniformity and far-reaching illumination characteristic can then be projected to be used by lighting equipment such as road lamp, car lamp, desktop lamp and flash light, etc. Therefore, when people are performing activity during the night or at the site with insufficient light, people will then have sufficient and bright light for illumination purpose. In other words, people can perform the activity more safely and more smoothly. Especially during the design of the road lamp, through the use of wide angle, high luminosity, high light uniformity and far-reaching illumination characteristic, the installation interval of the road lamp can then be enlarged, and the installation quantity of the road lamp can be reduced, finally, the road lamp installation cost and electrical energy consumption cost can be greatly reduced, and the final goal of energy saving and carbon reduction as well as environment protection effectiveness can be achieved.

From the above structure and embodiment method, it can be seen that this invention has the following advantages:

1. In this invention, on the reflector surface of the lamp shade, it is formed with front and rear reflector surfaces, meanwhile, the front and rear reflector surfaces are installed with oblique surfaces that descend obliquely on both sides, through the design of oblique surface, the wide angle divergent and emitting effect of the light emitted by luminous body towards the front and rear sides of the main body of lamp shade can then be enlarged.

2. In this invention, on the reflector surface of the lamp shade, it is formed with left and right reflector surfaces, meanwhile, on the left and right reflector surfaces, it is installed with several protruding lines that are installed in interval way, through the installation of such protruding line, light emitted by luminous body can get reflected by protruding line to form gradually expanded and down-emitting ray, hence, the ray can reach the effect of wide angle and

far-reaching illumination characteristic in the left and right sides of the lamp shade.

3. In this invention, on the reflector surface of the lamp shade, it is installed with reflection grain, through the installation of the reflection grain, light projected on the reflection grain can then follow the curved surface on reflection grain to generate ray of multiple angle reflection; moreover, the ray can get alternate and backward-and-forward reflection within the arc concave shape reflector surface to generate high density light, hence, the luminosity and uniformity of light emitted from luminous body can be enhanced.
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Claims

1. A lamp shade structure for enhancing luminous efficiency, which comprises of main body of lamp shade, and in the main body of lamp shade, it is installed with arc concave shape reflector surface; meanwhile, on the arc
5 concave shape reflector surface, it is formed with front and rear reflector surfaces and left and right reflector surfaces that are installed in opposite setup way; meanwhile, at the center of the front and rear reflector surfaces, it is formed with protruding ridge trail, and starting from ridge trail, it will descend obliquely towards both sides, and oblique surfaces will then be
10 formed at both sides of ridge trail, in addition, in the left and right reflector surfaces, it is installed with several protruding lines that are installed in interval way.
2. The lamp shade structure for enhancing luminous efficiency of claim 1
15 wherein two oblique surfaces possessed by the front and rear reflector surfaces of the main body of lamp shade are further installed with a plurality of reflection grains.
3. The lamp shade structure for enhancing luminous efficiency of claim 2
20 wherein the plurality of reflection grains on two oblique surfaces possessed by the front and rear reflector surfaces of the main body of the lamp shade are set up in correspondence arrangement way.
4. The lamp shade structure for enhancing luminous efficiency of claim 3
25 wherein the interval formed by each protruding line of the left and right reflector surfaces of the main body of the lamp shade is installed with several reflection grains.

5. The lamp shade structure for enhancing luminous efficiency of claim 4 wherein several reflection grains of each interval of the left and right reflector surfaces of the main body of lamp shade are set up in interleaved arrangement way.

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6. The lamp shade structure for enhancing luminous efficiency of claim 5 wherein all flat bottom surface is installed at the center formed by left and right reflector surfaces and front and rear reflector surfaces of the arc concave shape reflector surface of the main body of the lamp shade; moreover, at the bottom surface, it is installed with several reflection grains, and at the bottom surface, it is installed with through hole.

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7. The lamp shade structure for enhancing luminous efficiency of claim 1 wherein on two oblique surfaces possessed by the front and rear reflector surfaces of the main body of the lamp shade, it is installed with a plurality of reflection grains.

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8. The lamp shade structure for enhancing luminous efficiency of claim 7 wherein on the interval formed by each protruding line of the left and right reflector surfaces of the main body of the lamp shade, it is installed with a plurality of reflection grains.

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9. The lamp shade structure for enhancing luminous efficiency of claim 8 wherein at the center part of the left and right reflector surfaces and front and rear reflector surfaces of the arc concave shape reflector surface of the main body of the lamp shade, it is installed with all flat bottom surface; and on the bottom surface, it is installed with several reflection grains, and at the bottom surface, it is installed with through hole.

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10. The lamp shade structure for enhancing luminous efficiency of anyone of claim 1 to 9 wherein for the main body of the lamp shade, its one end is opened end, and another end is closed end, and in the meantime, the internal side is a hollow real body; moreover, the arc concave shape reflector surface is formed within the internal surface of the closed end of the main body of the lamp shade.