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EP 2 083 213 B1

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Description

Technical Field

[0001] The present invention relates to a vehicle light including a bulb with a top coat formed thereon, and in particular, to a vehicle light enabling to prevent the generation of glare light by shielding direct light beams emitted from the light emission portion of the top coated bulb diagonally upward in a substantially illumination direction.

Background Art

[0002] Conventional vehicle lights (for example, headlamps) can have a housing (or a lamp body) 1, an outer lens (or a front lens) 2 defining a lighting chamber 3 together with the housing 1, a top coated bulb with a light-shielding coat 4a1 formed thereon at its top end portion (or a top portion) 4a, and a reflector 5 configured to reflect light beams emitted from a light emission portion 4b of the bulb 4. The bulb with the top coat 4 (hereinafter referred to as a "top coated bulb") and the reflector 5 are contained within the lighting chamber 3. Furthermore, in this type of conventional vehicle light, the center portion of the outer lens 2 is made of plain glass with no substantial lens function. (For example, a vehicle headlamp disclosed in Japanese Patent Application Laid-Open No. 2001-176450.)

[0003] Fig. 1 and Fig. 2 illustrate examples of such conventional vehicle headlamps, respectively (Fig. 1 shows a vehicle headlamp disclosed in Fig. 6 of Japanese Patent Application Laid-Open No. 2001-176450 and Fig. 2 shows a vehicle headlamp disclosed in Fig. 2 of Japanese Patent Application Laid-Open No. 2001-176450).

[0004] The conventional vehicle headlamp illustrated in Fig. 1 includes a hood (or a shade) 6 in order for a person not to directly see the light-shielding coat 4a1 applied at the top end portion 4a of the bulb 4 from the outside through the outer lens (or a front lens) 2. The hood (shade) 6 has a substantially parasol-like shape and is disposed between the top end portion 4a of the bulb 4 and the outer lens 2.

[0005] The other conventional vehicle headlamp illustrated in Fig. 2 does not include a parasol-shaped hood. However, in order for a person not to directly see the light-shielding coat 4a1 applied thereon at the top end portion 4a of the bulb 4 from the outside, the conventional vehicle headlamp of Fig. 2 has the light-shielding coat 4a1 formed of a particular material that can be difficult to be seen from the outside through the outer lens 2.

[0006] Still another conventional vehicle headlamp is configured as disclosed in Fig. 5 of Japanese Patent Application Laid-Open No. 2003-249103. This vehicle headlamp includes a housing 1 and an outer lens 2 (or a lamp lens) which together define a lighting chamber. The headlamp further includes a bulb 4 (for example, being a halogen lamp) and a reflector 5 for reflecting light

beams emitted from the light emission portion 4b of the bulb 4 in the illumination direction of the vehicle headlamp, which are installed within the lighting chamber of the vehicle headlamp. In this case, the center portion of the outer lens 2 is made of plain glass with no substantial lens function. Furthermore, the reflector 5 can include a reflection portion (or a reflector portion) 5a for reflecting light beams emitted from the light emission portion 4b of the bulb 4 in the illumination direction of the vehicle headlamp, and a side wall portion 5b that extends forward from the edge portion of the reflection portion (reflector portion) 5a.

[0007] Fig. 3 shows such a conventional vehicle headlamp (one disclosed in Fig. 5 of Japanese Patent Application Laid-Open No. 2003-249103). In this vehicle headlamp, the light beams emitted from the light emission portion 4b of the bulb 4 (for example, being a halogen lamp) can be incident on the side wall portion 5b that extends forward from the lower edge of the reflection portion 5a of the reflector 5 and then be reflected by that side wall portion 5b. In this case, in order to prevent the reflected light beams from being projected diagonally upward in the illumination direction of the vehicle headlamp to become glare light, the side wall portion 5b that extends forward from the lower edge of the reflection portion 5a of the reflector 5 has a knurled portion 5b2a.

[0008] However, there is no description with regard to the problem in which direct light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp become glare light, and accordingly, there is no countermeasure for removing causes associated with this problem. In other words, there is a possibility that part of the light beams emitted from the light emission portion of the bulb diagonally upward in the illumination direction of the vehicle headlamp may not be shielded by the light-shielding coat at the top end portion of the bulb and may become glare light. However, there is no idea for reducing the possibility in these patent references.

[0009] US 2001/0004319 A1 discloses a vehicular lighting fixture equipped with a bulb applied with a glare protection paint. The bulb is disposed at the center of the reflector. Furthermore, the reflector does not have any side wall portion for shielding the direct light from the bulb.

[0010] GB-A-2,253,046 discloses a projection-type vehicle headlamp that has a bulb without a top coat. The bulb is disposed at the center of the reflector. Furthermore, a light diffusing region has cylindrical stripe-shaped members, but it is used to diffuse the light reflected by the front lens. Accordingly, the reflector does not have any side wall portion for shielding the direct light from the bulb as well as any diffusion means for diffusing the direct light from the bulb.

[0011] EP-A-0 112 397 discloses a vehicle headlamp that includes a lamp substantially at the center of the reflector of the headlamp. The vehicle headlamp has the light reducing means arranged at the zone of the reflector that is positioned in the rear of the light emission portion

of the bulb, but does not have any light shielding side wall like the present invention. The light reducing means disclosed in this publication is intended to irregularly reflecting light. Accordingly, this configuration does not function like the present invention that can prevent the direct light beams emitted from the light emission portion of the bulb from becoming glare light.

Summary of Invention

Technical Problem

[0012] In view of the foregoing problems associated with the prior art, an object of the present invention is to provide a vehicle light having a bulb with a top coat provided thereon, for preventing light beams emitted from its light emission portion diagonally upward in the illumination direction of the vehicle light from becoming glare light without being shielded by the top coat.

[0013] In particular, an object of the present invention is to provide a vehicle light that can reduce or prevent any possibility that part of the light beams emitted from the light emission portion of a top-coated bulb diagonally upward in the illumination direction of the vehicle light is not shielded by a light-shielding coat at the top end portion of the bulb and become glare light.

[0014] Furthermore, another object of the present invention is to provide a vehicle light that can reduce or prevent any possibility that part of the light beams emitted from the light emission portion of a top-coated bulb diagonally rearward and downward of the vehicle light become glare light, more effectively or sufficiently than the case where a lower edge portion of a reflection portion of a reflector is located behind a plane that is perpendicular to a main optical axis of the bulb and passes the light emission portion of the bulb, in addition to the reduction of the possibility that direct light beams emitted from the light emission portion of the bulb diagonally upward in the illumination direction of the vehicle light become glare light.

Solution to Problem

[0015] According to the present invention, there is provided a vehicle light illuminating in a predetermined illumination direction, as set forth in claim 1.

[0016] In this vehicle light, a lower edge portion of the reflection portion of the reflector is disposed before a plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb. Furthermore, the light beams emitted from the light emission portion of the top-coated bulb diagonally upward in the illumination direction of the vehicle light are shielded by any of the light-shielding coat provided to the bulb and the side wall portion of the reflector.

[0017] According to the present invention, the main optical axis of the light emission portion of the top-coated bulb is disposed above a vertical center of the reflection

portion of the reflector.

[0018] According to a preferred embodiment of the present invention, the outer lens includes a light-shielding and/or diffusion portion at or near an upper edge portion thereof. Furthermore, the light beams emitted from the light emission portion of the top-coated bulb diagonally upward in the illumination direction of the vehicle light are shielded by the light-shielding coat provided to the bulb, the side wall portion of the reflector, and the light-shielding and/or diffusion portion of the outer lens.

[0019] Preferred embodiments of the present invention may be gathered from the dependent claims.

Advantageous Effects of Invention

[0020] The vehicle light according to the present invention has the top-coated bulb with the light-shielding coat provided at its top end portion and the reflector for reflecting light beams emitted from the light emission portion of the bulb in the illumination direction of the vehicle light. The bulb and the reflector are disposed within the lighting chamber defined by the housing and the outer lens. The reflector includes the reflection portion for reflecting light beams emitted from the light emission portion of the top-coated bulb in the illumination direction and the side wall portion that extends from the edge portion of the reflection portion substantially in the illumination direction.

[0021] Suppose the case where the lower edge portion of the reflection portion of the reflector is located behind a plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb. In this case, there is a possibility that part of the light beams emitted from the light emission portion of the bulb diagonally rearward and downward of the vehicle light can be incident on the side wall portion that extends forward from the lower edge portion of the reflection portion of the reflector and be reflected by the same, and then reach the reflection portion to be reflected thereby, to become glare light directed diagonally upward in the illumination direction.

[0022] In view of the problem associated with the above case, the vehicle light according to the present invention is configured such that the lower edge portion of the reflection portion of the reflector is disposed before the plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb. Accordingly, it is possible to reduce or prevent any possibility that part of the light beams emitted from the light emission portion of the top-coated bulb diagonally rearward and downward of the vehicle light become glare light, more effectively or sufficiently when compared with the case where the lower edge portion of the reflection portion of the reflector is located behind the plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb. Furthermore, when compared with the case where the lower edge portion of the reflection portion of the reflector is

located behind the plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb, the present invention can improve the light utilization efficiency in the illumination direction of light beams emitted from the light emission portion of the top-coated bulb downward of the vehicle light and reflected by the reflection portion of the reflector.

[0023] In the vehicle light according to the present invention, the light beams emitted from the light emission portion of the top-coated bulb diagonally upward in the illumination direction can be shielded by any of the light-shielding coat and the side wall portion of the reflector. Accordingly, the possibility that direct light beams emitted from the light emission portion of the bulb diagonally upward in the illumination direction of the vehicle light become glare light can be reduced. In other words, the light beams that are not shielded by the light-shielding coat of the bulb can be prevented from becoming glare light.

[0024] Accordingly, it is possible to reduce or prevent any possibility that part of the light beams emitted from the light emission portion of the top-coated bulb diagonally rearward and downward of the vehicle light become glare light, more effectively or sufficiently when compared with the case where the lower edge portion of the reflection portion of the reflector is located behind the plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb. In addition to this, the possibility that direct light beams emitted from the light emission portion of the bulb diagonally upward in the illumination direction become glare light can be reduced.

[0025] The vehicle light according to the present invention does not require a hood or the like member disposed between the top end portion of the bulb and the outer lens.

[0026] The conventional vehicle light has a problem in which the provision of a hood between the top end portion of the bulb and the outer lens may prevent the efficient heat dissipation from the bulb, resulting in increased temperature of the bulb. This may shorten the useful life of the bulb. Conversely, the vehicle light according to the present invention can solve such a problem.

[0027] Furthermore, the conventional vehicle light has a problem in which the provision of a hood between the top end portion of the bulb and the outer lens may prevent the efficient heat dissipation from the bulb, resulting in increased temperature of the hood and the reflector disposed around the bulb. This may degrade these components' materials. Conversely, the vehicle light according to the present invention can solve such a problem.

[0028] The conventional vehicle light also has a problem in which the provision of a hood between the top end portion of the bulb and the outer lens increases the parts number of the entire vehicle light as well as the number of process steps, resulting in increased cost of the vehicle light. Conversely, the vehicle light according to the present invention can solve such a problem bulb and the outer lens shields not only the direct light beams from the bulb but also the light beams reflected from the re-

flexion portion of the reflector, resulting in decreased light utilization efficiency. Conversely, the vehicle light according to the present invention does not need such a hood, and accordingly, can solve such a problem.

[0029] In the vehicle light according to a preferred embodiment of the present invention, the light beams emitted from the light emission portion of the top-coated bulb diagonally upward in the illumination direction can be shielded by the light-shielding coat, the side wall portion of the reflector, and the light-shielding portion or diffusion portion provided around the upper edge portion of the outer lens. Accordingly, the possibility that direct light beams emitted from the light emission portion of the bulb diagonally upward in the illumination direction of the vehicle light become glare light can be reduced. In other words, the light beams that are not shielded by the light-shielding coat of the bulb can be prevented from becoming glare light.

[0030] Accordingly, it is possible to reduce or prevent any possibility that part of the light beams emitted from the light emission portion of the top-coated bulb diagonally rearward and downward of the vehicle light become glare light, more effectively or sufficiently when compared with the case where the lower edge portion of the reflection portion of the reflector is located behind the plane that is perpendicular to the main optical axis of the bulb and passes the light emission portion of the bulb. In addition to this, the possibility that direct light beams emitted from the light emission portion of the bulb diagonally upward in the illumination direction become glare light can be reduced.

[0031] In the vehicle light according to the present invention, the main optical axis of the light emission portion of the top-coated bulb is disposed above the vertical center of the reflection portion of the reflector. In particular, when the vehicle light is applied to a motorcycle, it is possible to prevent the interference with a front fork of the motorcycle.

[0032] In the vehicle light according to a preferred embodiment of the present invention, the center portion of the outer lens is made of plain glass with no substantial lens function. This configuration can provide a desired light distribution formed by the reflection portion of the reflector to be projected in the illumination direction as is without being affected by the outer lens.

[0033] In the vehicle light according to another preferred embodiment of the present invention, the side wall portion is provided so as to extend in the illumination direction from the lower edge portion of the reflection portion of the reflector. In this case, the side wall portion is provided with diffusion means in order to diffuse and reflect light beams emitted from the light emission portion of the bulb diagonally downward in the illumination direction of the vehicle light.

[0034] In the conventional vehicle light, the light beams emitted from the light emission portion of the bulb diagonally downward in the illumination direction of the vehicle light are incident on the side wall portion that extends

in the illumination direction from the lower edge of the reflection portion of the reflector and then be reflected by the same. The reflected light beams are projected diagonally upward in the illumination direction of the vehicle light to become glare light. Conversely, in the vehicle light according to the fifth aspect of the present invention, the side wall portion is provided with diffusion means such as a knurled portion to thereby solve the above-mentioned problem.

[0035] The vehicle light according to another preferred embodiment of the present invention is configured such that the side wall portion that extends from the upper edge portion of the reflection portion of the reflector and the main optical axis of the bulb (or the light emission portion of the bulb) are separated by a predetermined sufficient distance so that the components cannot be affected by heat generated by the bulb. In the vehicle light according to another preferred embodiment of the present invention, the predetermined distance can be set to at least 50 mm. Accordingly, when compared with the case where the distance between the side wall portion of the reflector and the light emission portion of the bulb is set to less than 50 mm, this configuration can reduce the possibility that the side wall portion of the reflector may be heated to rise its temperature.

[0036] Furthermore, the vehicle light of the present invention is preferably used as a vehicle headlamp in order to fully exert the advantageous effects thereof.

Brief Description of Drawings

[0037]

Fig. 1 is a cross-sectional view illustrating a conventional vehicle headlamp which is equivalent to that shown in Fig. 6 of Japanese Patent Application Laid-Open No. 2001-176450;

Fig. 2 is a cross-sectional view illustrating another conventional vehicle headlamp which is equivalent to that

Fig. 3 is a cross-sectional view illustrating still another conventional vehicle headlamp which is equivalent to that shown in Fig. 5 of Japanese Patent Application Laid-Open No. 2003-249103;

Fig. 4A and Fig. 4B are cross sectional views illustrating the configuration of a vehicle headlamp according to a first exemplary embodiment of the present invention;

Fig. 5A and Fig. 5B are cross-sectional views that shows the light paths for allowing light beams emitted from the light emission portion diagonally upward in the illumination direction of the vehicle headlamp as shown in Fig. 4A to pass therethrough;

Fig. 6A and Fig. 6B are cross-sectional views showing the vehicle headlamp according to a second exemplary embodiment of the present invention;

Fig. 7A and Fig. 7B are cross-sectional views that show the light paths for allowing light beams emitted

from the light emission portion diagonally upward in the illumination direction of the vehicle headlamp as shown in Fig. 6A to pass therethrough;

Fig. 8 is a cross-sectional view that shows the light paths for allowing light beams emitted from the light emission portion diagonally upward in the illumination direction of the vehicle headlamp as shown in Fig. 6A to pass therethrough; and

Fig. 9 is a cross-sectional view showing the vehicle headlamp according to a third exemplary embodiment.

Description of Embodiments

[0038] A description will now be made with regard to a vehicle light according to a first exemplary embodiment of the present invention. It should be noted that a vehicle headlamp is illustrated as an example of the vehicle light in the first and subsequent exemplary embodiments of the present invention. Fig. 4A and Fig. 4B illustrate the vehicle headlamp according to the first exemplary embodiment. Specifically, Fig. 4A is a cross-sectional view illustrating a vehicle headlamp according to the first exemplary embodiment taken along a vertical plane including the main optical axis L of a bulb 4 with a top coat or top-coated bulb 4 (hereinafter, referred to simply as a "bulb 4"). Fig. 4B shows light paths for allowing the light beams emitted from a light emission portion 4b of the bulb 4 rearward of the vehicle headlamp (right side of Fig. 4A) to pass therethrough.

[0039] Fig. 5A and Fig. 5B show light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp (left side of Fig. 4A or in the traveling direction of the vehicle) to pass therethrough. Specifically,

[0040] Fig. 5A shows light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp at a relatively small angle with respect to the main optical axis L of the bulb 4 to pass therethrough. Fig. 5B shows light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp at a relatively large angle with respect to the main optical axis L to pass therethrough.

[0041] The vehicle headlamp of the first exemplary embodiment is provided with a housing 1 and an outer lens 2, as shown in Fig. 4A, to define a lighting chamber 3 by the housing 1 and the outer lens 2. The vehicle headlamp of the first exemplary embodiment is also provided with the bulb 4 and a reflector 5. The bulb 4 includes a light-shielding coat 4a1 at its top end portion 4a and the light emission portion 4b. The reflector 5 is configured to reflect light beams emitted from the light emission portion 4b of the bulb 4 to project the light beams in the illumination direction of the vehicle headlamp (left side in Fig. 4A). These components are disposed within the lighting

chamber 3. In this instance, the reflector 5 can be connected and fixed to the housing 1 with, for example, a ball joint and an aiming screw (both of them are not shown in the drawing).

[0042] As shown in Fig. 4B, the reflector 5 includes a reflection portion 5a, and a side wall portion 5b1 and another side wall portion 5b2. The reflection portion 5a can reflect light beams emitted from the light emission portion 4b of the bulb 4 rearward of the vehicle headlamp (right side in Fig. 4B) to direct the light beams in the illumination direction of the vehicle headlamp (left side in Fig. 4B). The side wall portion 5b1 extends from the upper edge portion 5a1 of the reflection portion 5a forward (left side in Fig. 4B). The side wall portion 5b2 extends from the lower edge portion 5a2 of the reflection portion 5a forward.

[0043] As shown in Fig. 4B, the outer lens 2 includes a center portion 2a made of plain glass with no substantial lens function in order for the reflected light from the reflection portion 5a of the reflector 5 to pass therethrough substantially without optical effect.

[0044] Suppose the comparative vehicle headlamp includes the reflector 5 with the lower edge portion 5a2 of the reflection portion 5a thereof disposed behind the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4 (right side in Fig. 4B). In this case, the light beams emitted from the light emission portion 4b of the bulb 4 diagonally rearward and downward of the vehicle headlamp (right lower side in Fig. 4B) can be incident on the side wall portion 5b2 of the reflector 5 to be reflected by the same. Then, the reflected light beams can be incident on the reflection portion 5a of the reflector 5 to be reflected by the same. The reflected light beams may be projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 4B) to become glare light.

[0045] In view of this point, the vehicle headlamp of the first exemplary embodiment is configured such that the lower edge portion 5a2 of the reflection portion 5a of the reflector 5 is disposed before the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4, as shown in Fig. 4B.

[0046] When compared with the case where the reflector 5 is configured such that the lower edge portion 5a2 of the reflection portion 5a thereof is disposed behind the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4 (right side in Fig. 4B), the vehicle headlamp of the first exemplary embodiment can reduce the possibility that part of the light beams emitted from the light emission portion 4b of the bulb 4 diagonally rearward and downward (right lower side in Fig. 4B) of the vehicle headlamp is projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 4B) to become glare light.

[0047] Furthermore, when compared with the case

where the reflector 5 is configured such that the lower edge portion 5a2 of the reflection portion 5a thereof is disposed behind the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4 (right side in Fig. 4B), the vehicle headlamp of the first exemplary embodiment can increase the light amount by directing part of the light beams emitted from the light emission portion 4b of the bulb 4 downward (lower side in Fig. 4B) of the vehicle headlamp to be projected in the illumination direction of the vehicle headlamp (left side in Fig. 4B). Namely, the light utilization efficiency can be improved.

[0048] Furthermore, in the vehicle headlamp of the first exemplary embodiment illustrated in Fig. 4A, the light emission portion 4b of the bulb 4 is disposed above the vertical center C of the reflection portion 5a of the reflector 5 (upper side in Fig. 4A).

[0049] In the vehicle headlamp of the first exemplary embodiment configured as described above in Fig. 5A, the light beams L1 and L1' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction at a relatively small angle with respect to the main optical axis L of the bulb 4 (left upper side in Fig. 5A) can be shielded by the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4.

[0050] In addition to this, as shown in Fig. 5B the light beams L2 and L2' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction at a relatively large angle with respect to the main optical axis L of the bulb 4 (left upper side in Fig. 5B) can be shielded by the side wall portion 5b1 of the reflector 5.

[0051] In other words, as shown in Figs. 5A and 5B, the vehicle headlamp of the first exemplary embodiment is configured such that the light beams L1, L1', L2, and L2' emitted from the light emission portion 4b of the top-coated bulb 4 diagonally upward in the illumination direction (left upper side in the drawings) can be reliably shielded by at least any one of the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4 and the side wall portion 5b1 of the reflector 5.

[0052] This configuration can prevent the direct light beams L1, L1', L2, and L2' emitted from the light emission portion 4b of the bulb 4 from becoming glare light. Namely, it is possible to reduce the possibility that the light beams L1, L1', L2, and L2' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in the drawings) cannot be shielded by the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4 to thereby be projected as the light beams L2, and L2' becoming glare light.

[0053] The vehicle headlamp of the first exemplary embodiment does not need any parasol-shaped hood (or shade) which is to be disposed between the top end portion 4a of the top-coated bulb 4 and the outer lens 2 in the conventional vehicle headlamp as shown in Fig. 1.

[0054] In the conventional vehicle headlamp as shown in Fig. 1, the parasol-shaped hood (or shade) is required

to be disposed between the top end portion 4a of the top-coated bulb 4 and the outer lens 2, and accordingly, heat generated from the bulb 4 cannot be effectively dissipated to increase the bulb temperature, resulting in decreased life of the bulb. Conversely, the vehicle headlamp of the first exemplary embodiment according to the present invention does not need such a hood (shade), and accordingly, can solve such a problem before something happens.

[0055] Furthermore, the conventional vehicle light as shown in Fig. 1 has a problem in which the bulb 4 generates heat to increase the temperatures of the hood (shade) and the reflector. This may degrade these components' materials. Conversely, the vehicle headlamp of the first exemplary embodiment according to the present invention can solve such a problem before something happens.

[0056] The conventional vehicle light as shown in Fig. 1 has a problem in which the provision of a hood (shade) between the top end portion 4a of the bulb 4 and the outer lens 2 increases the parts number of the entire vehicle headlamp as well as the number of process steps, resulting in increased costs of the vehicle headlamp. Conversely, the vehicle headlamp of the first exemplary embodiment according to the present invention does not need any hood (or shade) like this and can solve such a problem before something happens.

[0057] The conventional vehicle headlamp of Fig. 1 has the hood (shade) which is in the parasol shape and disposed between the top end portion 4a of the bulb 4 and the outer lens 2. This hood shields not only the direct light beams from the bulb 4 but also the light beams reflected from the reflection portion 5a of the reflector 5, resulting in decreased light utilization efficiency. Conversely, the vehicle headlamp of the first exemplary embodiment according to the present invention does not need such a hood (shade), and accordingly, can solve such a problem before something happens.

[0058] In the vehicle headlamp of the first exemplary embodiment according to the present invention, the side wall portion 5b2 is provided to extend in the illumination direction (left side in Fig. 4A) from the lower edge portion 5a2 of the reflection portion 5a of the reflector 5 as shown in Fig. 4A. In this case, the side wall portion 5b2 is provided with diffusion means in order to diffuse and reflect light beams emitted from the light emission portion 4b of the bulb 4 diagonally downward in the illumination direction of the vehicle headlamp (left lower side in Fig. 4A). In the present invention, a knurled portion 5b2a is preferably formed in the side wall portion 5b2 as diffusion means.

[0059] The light beams emitted from the light emission portion 4b of the bulb 4 diagonally downward in the illumination direction of the vehicle headlamp (left lower side in Fig. 4A) are incident on the side wall portion 5b2. The light beams reflected by the same may be projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 4A) as glare light (high

intensity light beams which dazzle one's eyes). Conversely, the vehicle headlamp of the first exemplary embodiment according to the present invention has the side wall portion 5b2 provided with diffusion means such as the knurled portion 5b2a to thereby solve the above-mentioned problem.

[0060] In other words, the vehicle headlamp of the first exemplary embodiment can change the light beams emitted from the light emission portion 4b of the bulb 4 diagonally downward in the illumination direction of the vehicle headlamp (left lower side in Fig. 4A) to weakened light beams, which does not become glare light, by diffusing them with the knurled portion 5b2a. Then, the weakened light beams are projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 4A) to thereby prevent them from becoming glare light.

[0061] The vehicle headlamp of the first exemplary embodiment is provided with the side wall portion 5b2 that extends forward of the vehicle headlamp (left side in Fig. 4A) from the lower edge portion 5a2 of the reflection portion 5a of the reflector 5 as shown in Fig. 4A. In addition to this, the side wall portion 5b2 is provided with the knurled portion 5b2a serving as diffusion means. The present invention, however, is not limited to this configuration, and it is possible to omit the side wall portion 5b2 itself or the knurled portion 5b2a in accordance with the intended applications.

[0062] The vehicle headlamp of the first exemplary embodiment is preferably configured such that the side wall portion 5b1 of the reflector 5 and the main optical axis L of the bulb 4 (or the light emission portion 4b of the bulb 4) are separated by at least 50 mm. Accordingly, when compared with the case where the distance between the side wall portion 5b1 and the main optical axis L of the bulb 4 is set to less than 50 mm, the vehicle headlamp of the first exemplary embodiment can reduce the possibility that the side wall portion 5b1 may be heated by the bulb 4 to rise its temperature.

[0063] The vehicle headlamp of the first exemplary embodiment is preferably configured such that the light emission portion 4b of the bulb 4 is disposed above the vertical center C of the reflection portion 5a of the reflector 5 (upper side in Fig. 4A). In particular, when the vehicle headlamp of the first exemplary embodiment is applied to a motorcycle, it is possible to prevent the interference of the headlamp with a front fork of the motorcycle. In other words, when compared with the case where the light emission portion 4b of the bulb 4 is disposed on or below the vertical center C of the reflection portion 5a of the reflector 5, the vehicle headlamp of the first exemplary embodiment according to the present invention can reduce the possibility that the vehicle headlamp interferes with a front fork 10 of a motorcycle.

[0064] A description will now be given of another vehicle headlamp in accordance with a second exemplary embodiment of the present invention. The vehicle headlamp of the second exemplary embodiment is configured

in the same manner as the vehicle headlamp of the first exemplary embodiment except for the following points. Accordingly, the vehicle headlamp of the second exemplary embodiment can provide the same or similar advantageous effects as or to those of the vehicle headlamp of the first exemplary embodiment except for the following points.

[0065] Fig. 6A and Fig. 6B illustrate the vehicle headlamp of the second exemplary embodiment. Specifically, Fig. 6A is a cross-sectional view showing the vehicle headlamp according to the second exemplary embodiment taken along the vertical plane including the main optical axis L of the bulb 4. Fig. 6B is a cross-sectional view that shows the light paths for allowing light beams emitted from the light emission portion 4b of the bulb 4 rearward of the vehicle headlamp as shown in Fig. 6A to pass therethrough, in the same vertical plane as shown in Fig. 6A.

[0066] Figs. 7A, 7B, and 8 are cross-sectional views that each show the light paths for allowing light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp as shown in Fig. 6A to pass therethrough, in the same vertical plane as shown in Fig. 6A. Specifically, Fig. 7A shows light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp at a relatively small angle with respect to the main optical axis L of the bulb 4 to pass therethrough. Fig. 7B shows light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp at a relatively large angle with respect to the main optical axis L to pass therethrough. Fig. 8 shows light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp at an angle that is larger than that in the case shown in Fig. 7A and smaller than that in the case shown in Fig. 7B, with respect to the main optical axis L to pass therethrough.

[0067] As in the vehicle headlamp of the first exemplary embodiment, the vehicle headlamp of the second exemplary embodiment has a reflector 5 with its lower edge portion 5a2 of the reflection portion 5a disposed before the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4 (left side in Fig. 6B).

[0068] Accordingly, when compared with the case where the reflector 5 is configured such that the lower edge portion 5a2 of the reflection portion 5a thereof is disposed behind the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4 (right side in Fig. 6B), the vehicle headlamp of the second exemplary embodiment can reduce the possibility that part of the light beams emitted from the light emission portion 4b of the bulb 4 diagonally rearward and downward (right lower

side in Fig. 6B) of the vehicle headlamp is projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 6B) to become glare light.

[0069] Furthermore, when compared with the case where the reflector 5 is configured such that the lower edge portion 5a2 of the reflection portion 5a thereof is disposed behind the plane that is perpendicular to the main optical axis L of the bulb 4 and passes the light emission portion 4b of the bulb 4 (right side in Fig. 6B), the vehicle headlamp of the second exemplary embodiment can increase the light amount by directing part of the light beams emitted from the light emission portion 4b of the bulb 4 downward (lower side in Fig. 6B) of the vehicle headlamp so as to be projected in the illumination direction of the vehicle headlamp (left side in Fig. 6B). Namely, the light utilization efficiency can be improved.

[0070] Furthermore, in the vehicle headlamp of the second exemplary embodiment illustrated in Fig. 6A, the light emission portion 4b of the bulb 4 is disposed above the vertical center C of the reflection portion 5a of the reflector 5 (upper side in Fig. 6A), as in the vehicle headlamp of the first exemplary embodiment.

[0071] In the vehicle headlamp of the second exemplary embodiment configured as described above in Fig. 7A, the light beams L1 and L1' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction at a relatively small angle with respect to the main optical axis L of the bulb 4 (left upper side in Fig. 7A) can be shielded by the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4.

[0072] In addition to this, as shown in Fig. 7B the light beams L2 and L2' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction at a relatively large angle with respect to the main optical axis L of the bulb 4 (left upper side in Fig. 7B) can be shielded by the side wall portion 5b1 of the reflector 5.

[0073] In addition, in the vehicle headlamp of the second exemplary embodiment, a diffusion portion is formed at the upper edge portion of the outer lens 2, as shown in Fig. 8. Specifically, the front portion 2b of the outer lens 2 is partially provided with a lens cut 2b2 serving as the diffusion portion in an area between the upper end portion 2b1 and the center portion 2a of the outer lens 2.

[0074] Accordingly, the light beams L3 and L3' which have not been shielded by any of the light-shielding coat 4a1 and the side wall portion 5b1 can be diffused by this lens cut 2b2. As a result, only a small amount of the light beams having passed through the lens cut 2b2 of the outer lens 2 can be projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 8).

[0075] Accordingly, the vehicle headlamp of the second exemplary embodiment can reduce the possibility that a large amount of the light beams L3 and L3' emitted from the bulb 4 is projected diagonally upward in the illumination direction of the vehicle headlamp (left upper

side in Fig. 8) to become glare light (which may dazzle one's eyes).

[0076] In other words, as shown in Figs. 7A, 7B, and 8, the vehicle headlamp of the second exemplary embodiment is configured such that the light beams L1, L1', L2, L2', L3, and L3' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in the drawings) can be reliably shielded (or diffused) by at least any one of the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4, the side wall portion 5b1 of the reflector 5, and the lens cut 2b2 at the upper edge portion of the outer lens 2.

[0077] This configuration can prevent the direct light beams L1, L1', L2, L2', L3, and L3' emitted from the light emission portion 4b of the bulb 4 from becoming glare light. Namely, it is possible to reduce the possibility where the light beams L1, L1', L2, L2', L3, and L3' emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in the drawings) cannot be shielded by the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4 to thereby be projected as the light beams L2, L2', L3, and L3' becoming glare light.

[0078] The vehicle headlamp of the second exemplary embodiment may be provided with the lens cut 2b2 on both surfaces of the front portion 2b of the outer lens 2 between the upper edge portion 2b1 and the center portion 2a (on the left side surface and right side surface in Fig. 8). The present invention, however, is not limited to this configuration, and it is possible to provide the lens cut 2b2 on either of the front side surface (on the left side surface in Fig. 8) and the rear side surface (on the right side surface in Fig. 8) between the upper edge portion 2b1 and the center portion 2a.

[0079] The vehicle headlamp of the second exemplary embodiment is provided with the lens cut 2b2 on the surfaces of the front portion 2b of the outer lens 2 between the upper edge portion 2b1 and the center portion 2a as shown in Fig. 8 to serve as the diffusion portion. The present invention, however, is not limited to this configuration, and it is possible to provide a knurled portion serving as a diffusion portion on the outer lens 2 between the upper edge portion 2b1 and the center portion 2a instead.

[0080] The vehicle headlamp of the second exemplary embodiment is provided with the lens cut 2b2 on the surfaces of the front portion 2b of the outer lens 2 between the upper edge portion 2b1 and the center portion 2a as shown in Fig. 8 to serve as the diffusion portion. The present invention, however, is not limited to this configuration, and it is possible to provide a coated portion serving as a light-shielding portion on the front portion 2b of the outer lens 2 between the upper edge portion 2b1 and the center portion 2a.

[0081] A description will now be given of another vehicle headlamp in accordance with a third exemplary embodiment of the present invention. The vehicle headlamp

of the third exemplary embodiment is configured in the same manner as the vehicle headlamp of the second exemplary embodiment except for the following points. Accordingly, the vehicle headlamp of the third exemplary embodiment can provide the same or similar advantageous effects as or to those of the vehicle headlamp of the second exemplary embodiment except for the following points.

[0082] Fig. 9 is a diagram illustrating the vehicle headlamp of the third exemplary embodiment. Specifically, Fig. 9 shows light paths for allowing the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction of the vehicle headlamp at an angle that is larger than that in the case shown in Fig. 7A and smaller than that in the case shown in Fig. 7B, with respect to the main optical axis L of the bulb 4 to pass therethrough.

[0083] In the vehicle headlamp of the third exemplary embodiment, the outer lens 2 includes a side wall portion 2c that extends from the upper edge portion 2b1 of the front portion 2b rearward (right side in Fig. 9) and the side wall portion 2c is provided with a diffusion portion formed thereon. In the present exemplary embodiment, a knurled portion 2c1 is preferably formed in the side wall portion 2c as the diffusion portion.

[0084] In the vehicle headlamp of the second exemplary embodiment, as shown in Fig. 8, the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in Fig. 8) are shielded by any of the light-shielding coat 4a1 at the top end portion 4a of the bulb 4 and the side wall portion 5b1 of the reflector 5. However, some of them are not shielded by any of them and those light beams L3 and L3' are allowed to pass through the lens cut 2b2 of the outer lens 2, but not allowed to pass through the side wall portion 2c. On the contrary, the vehicle headlamp of the third exemplary embodiment, as shown in Fig. 9, is configured such that some of the light beams emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in Fig. 9) are not shielded by any of the light-shielding coat 4a1 at the top end portion 4a of the bulb 4 and the side wall portion 5b1 of the reflector 5, and those light beams L3, L3', and L3'' are allowed to pass through the area of the outer lens 2 between the upper edge portion 3b1 of the front portion 2b and the center portion 2a as well as through the side wall portion 2c.

[0085] Specifically, in the vehicle headlamp of the third exemplary embodiment as shown in Fig. 9, the light beams L3'' which have not been shielded by any of the light-shielding coat 4a1 and the side wall portion 5b1 can be diffused by the knurled portion 2c1. As a result, only a small amount of the light beams having passed through the knurled portion 2c1 of the outer lens 2 may be projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 9).

[0086] Accordingly, the vehicle headlamp of the third exemplary embodiment can reduce the possibility that a

large amount of the light beams L3" emitted from the bulb 4 is projected diagonally upward in the illumination direction of the vehicle headlamp (left upper side in Fig. 9) to become glare light (which may dazzle one's eyes).

[0087] In other words, as shown in Figs. 7A, 7B, and 9, the vehicle headlamp of the third exemplary embodiment is configured such that the light beams L1, L1', L2, L2', L3, L3', and L3" emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in the drawings) can be reliably shielded (or diffused) by at least any one of the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4, the side wall portion 5b1 of the reflector 5, and the lens cut 2b2 at the upper edge portion and the knurled portion 2c1 of the outer lens 2.

[0088] This configuration can prevent the direct light beams L1, L1', L2, L2', L3, L3', and L3" emitted from the light emission portion 4b of the bulb 4 from becoming glare light. Namely, it is possible to reduce the possibility where the light beams L1, L1', L2, L2', L3, L3', and L3" emitted from the light emission portion 4b of the bulb 4 diagonally upward in the illumination direction (left upper side in the drawings) cannot be shielded by the light-shielding coat 4a1 provided at the top end portion 4a of the bulb 4 to thereby be projected as the light beams L2, L2', L3, L3', and L3" becoming glare light.

[0089] In the vehicle headlamp of the third exemplary embodiment, the outer lens 2 includes the side wall portion 2c that extends from the upper edge portion 2b1 of the front portion 2b rearward (right side in Fig. 9) with the side wall portion 2c provided with the knurled portion 2c1 serving as a diffusion portion formed thereon. The present invention, however, is not limited to this configuration, and it is possible to provide a coated portion serving as a light-shielding portion on the side wall portion 2c of the outer lens 2 instead.

[0090] Furthermore, the above-mentioned exemplary embodiments and their modifications can be appropriately combined with each other in accordance with the intended applications.

Industrial Applicability

[0091] The vehicle light of the present invention can be applied to a headlamp for use in a motor cycle, an automobile, and the like.

4a	top end portion
4a1	light-shielding coat
4b	light emission portion
5	reflector
5a	reflection portion
5a1	upper edge portion
5a2	lower edge portion
5b1, 5b2	side wall portion
5b2a	knurled portion

Citation List

Patent Literature

5 **[0092]** Japanese Patent Application Laid-Open No. 2001-176450

[0093] Japanese Patent Application Laid-Open No. 2003-249103

Claims

1. A vehicle light illuminating in a predetermined illumination direction, comprising:

15 a housing (1);
 an outer lens (2) which defines a lighting chamber (3) together with the housing (1);
 a top-coated bulb (4) having a light emission portion (4b) with a main optical axis (L) passing therethrough and a top end portion (4a) coated with a light-shielding coat (4a1), the bulb (4) being disposed within the lighting chamber (3);
 a reflector (5) disposed within the lighting chamber (3), for reflecting light beams emitted from the light emission portion (4b) of the top-coated bulb (4), the reflector (5) including a reflection portion (5a) for reflecting light beams emitted from the light emission portion (4b) of the top-coated bulb (4) in the illumination direction and a side wall portion (5b1, 5b2) that extends from an edge portion (5a1, 5a2) of the reflection portion (5a) substantially in the illumination direction,
 20 wherein a lower edge portion (5a2) of the reflection portion (5a) of the reflector (5) is disposed, with respect to the illumination direction as a front direction, before a plane that is perpendicular to the main optical axis (L) of the bulb (4) and passes the light emission portion (4b) of the bulb (4), and
 wherein the light beams emitted from the light emission portion (4b) of the top-coated bulb (4) diagonally upward in the illumination direction of the vehicle light are shielded by the light-shielding coat (4a1) provided to the bulb (4) and the side wall portion (5b1) of the reflector (5), wherein the main optical axis (L) of the light emission portion (4b) of the top-coated bulb (4) is disposed above a vertical center of the reflection portion (5a) of the reflector (5),
 25 **characterized in that**
 the outer lens (2) includes a light-shielding and/or diffusion portion at or near an upper edge portion (2b1) thereof,
 the light beams emitted from the light emission portion (4b) of the top-coated bulb (4) diagonally upward in the illumination direction of the vehicle

- light are shielded by the light-shielding coat (4a1) provided to the bulb (4), the side wall portion (5b1) of the reflector (5), and the light-shielding and/or diffusion portion of the outer lens (2); and
- wherein the side wall portion (5b2) is provided so as to extend in the illumination direction from the lower edge portion (5a2) of the reflection portion (5a) of the reflector (5), the side wall portion (5b2) being provided with diffusion means (5b2a) in order to diffuse and reflect light beams emitted from the light emission portion (4b) of the top-coated bulb (4) diagonally downward in the illumination direction.
2. The vehicle light according to Claim 1, wherein the outer lens (2) has a center portion made of plain glass with no substantial lens function.
 3. The vehicle light according to any one of Claims 1 and 2, wherein the side wall portion (5b1) that extends from the upper edge portion (5a1) of the reflection portion (5a) of the reflector (5) substantially in the illumination direction and the main optical axis (L) of the light emission portion (4b) of the top-coated bulb (4) are separated by a predetermined distance so that the side wall portion (5b1) is not affected by heat generated by the bulb (4). 3
 4. The vehicle light according to Claim 3, wherein the predetermined distance is at least 50 mm.
 5. The vehicle light according to any one of Claims 1 to 4, used as a vehicle headlamp.

Patentansprüche

1. Fahrzeuglicht, welches in einer vorbestimmten Beleuchtungsrichtung leuchtet und Folgendes aufweist:
 - ein Gehäuse (1);
 - eine äußere Linse (2), welche zusammen mit dem Gehäuse (1) eine Beleuchtungskammer (3) definiert;
 - eine oben beschichtete Birne (4), die einen Lichtemissionsteil (4b) mit einer optischen Hauptachse (L) hat, die dort hindurch verläuft, und einen oberen Endteil (4a), der mit einer lichtabschirmenden Beschichtung (4a1) beschichtet ist, wobei die Birne (4) in der Beleuchtungskammer (3) angeordnet ist;
 - einen Reflektor (5), der innerhalb der Beleuchtungskammer (3) angeordnet ist, zum Reflektieren von Lichtstrahlen, die aus dem Lichtemissionsteil (4b) der oben beschichteten Birne ausgestrahlt wurden, wobei der Reflektor (5) einen

Reflexionsteil (5a) zum Reflektieren von Lichtstrahlen aufweist, die von dem Lichtemissionsteil (4b), der oben beschichteten Birne in der Beleuchtungsrichtung ausgestrahlt wurden, und eine Seitenwand (5b1, 5b2), der sich von einem Kantenteil (5a1, 5a2) des Reflexionsteils (5a) im Wesentlichen in der Beleuchtungsrichtung erstreckt,

wobei ein unterer Kantenteil (5a2) des Reflexionsteils (5a) des Reflektors (5) bezüglich der Beleuchtungsrichtung als vorderer Richtung vor einer Ebene angeordnet ist, die senkrecht zur optischen Hauptachse (L) der Birne (4) ist und durch den Lichtemissionsteil (4b) der Birne (4) läuft, und

wobei die Lichtstrahlen, die von dem Lichtemissionsteil (4b) der oben beschichteten Birne (4) diagonal nach oben in der Beleuchtungsrichtung des Fahrzeuglichtes ausgestrahlt wurden, von der lichtabschirmenden Beschichtung (4a1), die auf der Birne (4) vorgesehen ist, und von dem Seitenwandteil (5b1) des Reflektors (5) abgeschirmt werden,

wobei die optische Hauptachse (L) des Lichtemissionsteils (4b) der oben beschichteten Birne (4) über einer vertikalen Mitte des Reflektionsteils (5a) des Reflektors (5) angeordnet ist,

dadurch gekennzeichnet, dass

die äußere Linse (2) einen Lichtabschirmungsteil und/oder Diffusionsteil an einem oder nahe an einem oberen Kantenteil (2b1) davon aufweist,

wobei Lichtstrahlen, die von dem Lichtemissionsteil (4b) der oben beschichteten Birne (4) diagonal nach oben in der Beleuchtungsrichtung des Fahrzeuglichtes ausgestrahlt wurden, von der lichtabschirmenden Beschichtung (4a1) abgeschirmt werden, die auf der Birne (4) vorgesehen ist, von dem Seitenwandteil (5b1) des Reflektors (5) und von dem lichtabschirmenden Teil und/oder Diffusionsteil der äußeren Linse (2), und

wobei der Seitenwandteil (5b2) so vorgesehen ist, dass er sich in der Beleuchtungsrichtung von dem unteren Kantenteil (5a2) des Reflektionsteils (5a) des Reflektors (5) erstreckt, wobei der Seitenwandteil (5b2) mit Diffusionsmitteln (5b2a) versehen ist, um Lichtstrahlen, die von dem Lichtemissionsteil (4b) der oben beschichteten Birne (4) diagonal nach unten in der Beleuchtungsrichtung ausgestrahlt wurden, zu diffundieren und zu reflektieren.

2. Fahrzeuglicht nach Anspruch 1, wobei die äußere Linse (2) einen mittleren Teil hat, der aus geradem Glas ohne wesentliche Linsenfunktion gemacht ist.

3. Fahrzeuglicht nach einem der Ansprüche 1 und 2,

wobei der Seitenwandteil (5b1) der sich vom oberen Kantenteil (5a1) des Reflexionsteils (5a) des Reflektors (5) im Wesentlichen in der Beleuchtungsrichtung erstreckt, und die optische Hauptachse (L) des Lichtemissionsteils (4b) der oben beschichteten Birne (4) um eine vorbestimmte Distanz getrennt sind, so dass der Seitenwandteil (5b1) nicht von Wärme beeinflusst wird, die von der Birne (4) erzeugt wird.

4. Fahrzeuglicht nach Anspruch 3, wobei die vorbestimmte Distanz mindestens 50 mm ist.
5. Fahrzeuglicht nach einem der Ansprüche 1 bis 4, welches als Fahrzeugscheinwerfer verwendet wird.

Revendications

1. Feu de véhicule éclairant dans une direction d'éclairage prédéterminée, comprenant :

un boîtier (1) ;
 une lentille extérieure (2) qui définit une chambre éclairante (3) conjointement avec le boîtier (1) ;
 une ampoule à extrémité recouverte (4) comportant une portion d'émission de lumière (4b) avec un axe optique principal (L) passant à travers, et une de portion d'extrémité supérieure (4a) revêtue d'un revêtement faisant écran à la lumière (4a1), l'ampoule (4) étant disposée dans la chambre éclairante (3) ;
 un réflecteur (5) disposé dans la chambre éclairante (3), pour réfléchir des faisceaux lumineux émis à partir de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4), le réflecteur (5) comprenant une portion de réflexion (5a) pour réfléchir des faisceaux lumineux émis à partir de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4) dans la direction d'éclairage, et une portion de paroi latérale (5b1, 5b2) qui s'étend à partir d'une portion de bord (5a1, 5a2) de la portion de réflexion (5a) sensiblement dans la direction d'éclairage,
 dans lequel une portion de bord inférieure (5a2) de la portion de réflexion (5a) du réflecteur (5) est disposée, en ce qui concerne la direction d'éclairage orientée vers l'avant, avant un plan qui est perpendiculaire à l'axe optique principal (L) de l'ampoule (4) et laisse passer la portion d'émission de lumière (4b) de l'ampoule (4), et dans lequel les faisceaux lumineux, émis à partir de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4) diagonalement vers le haut dans la direction d'éclairage de la lumière du véhicule, sont masqués par le revêtement faisant écran à la lumière (4a1) prévu

sur l'ampoule (4) et la portion de paroi latérale (5b1) du réflecteur (5),
 dans lequel l'axe optique principal (L) de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4) est disposé au-dessus d'un centre vertical de la portion de réflexion (5a) du réflecteur (5),

caractérisé en ce que

la lentille extérieure (2) comprend une portion faisant écran à la lumière et/ou de diffusion de lumière située au niveau ou à proximité d'une portion de bord supérieure (2b1) de celle-ci, les faisceaux lumineux émis à partir de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4) diagonalement vers le haut dans la direction d'éclairage de la lumière du véhicule sont masqués par le revêtement faisant écran à la lumière (4a1) prévu sur l'ampoule (4), par la portion de paroi latérale (5b1) du réflecteur (5), et par la portion faisant écran à la lumière et/ou de diffusion de la lentille extérieure (2) ; et

dans lequel la portion de paroi latérale (5b2) est prévue de façon à s'étendre dans la direction d'éclairage à partir de la portion de bord inférieure (5a2) de la portion de réflexion (5a) du réflecteur (5), la portion de paroi latérale (5b2) étant munie de moyens de diffusion (5b2a) afin de diffuser et de réfléchir les faisceaux lumineux émis à partir de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4) diagonalement vers le bas dans la direction d'éclairage.

2. Feu de véhicule selon la revendication 1, dans lequel la lentille extérieure (2) comporte une portion centrale faite de verre ordinaire n'ayant sensiblement pas de fonction de lentille.
3. Feu de véhicule selon l'une quelconque des revendications 1 et 2, dans lequel la portion de paroi latérale (5b1) qui s'étend à partir de la portion de bord supérieure (5a1) de la portion de réflexion (5a) du réflecteur (5) sensiblement dans la direction d'éclairage et l'axe optique principal (L) de la portion d'émission de lumière (4b) de l'ampoule à extrémité recouverte (4) sont séparés d'une distance prédéterminée afin que la portion de paroi latérale (5b1) ne soit pas affectée par la chaleur générée par l'ampoule (4).
4. Feu de véhicule selon la revendication 3, dans lequel la distance prédéterminée est d'au moins 50 mm.
5. Feu de véhicule selon l'une quelconque des revendications 1 à 4 utilisé comme phare de véhicule.

Fig. 1

Conventional Art

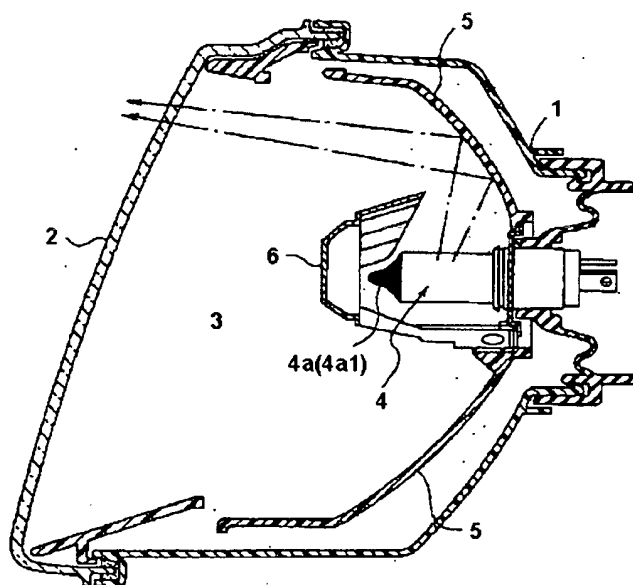


Fig. 2

Conventional Art

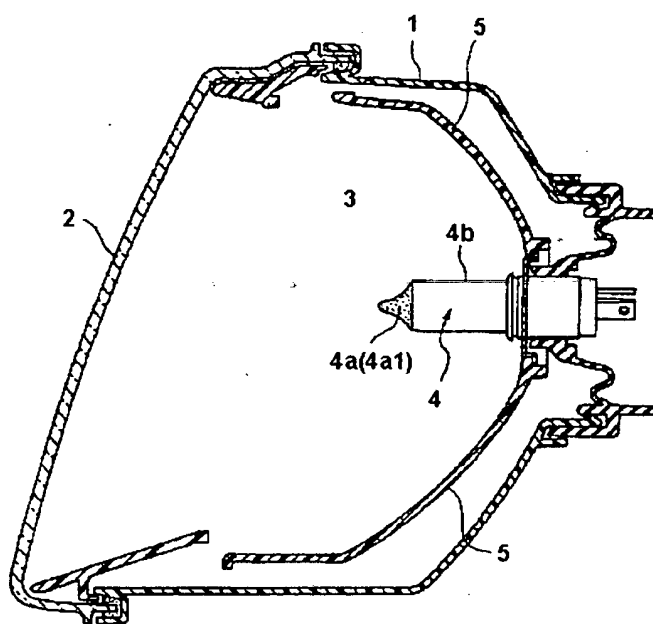


Fig. 3
Conventional Art

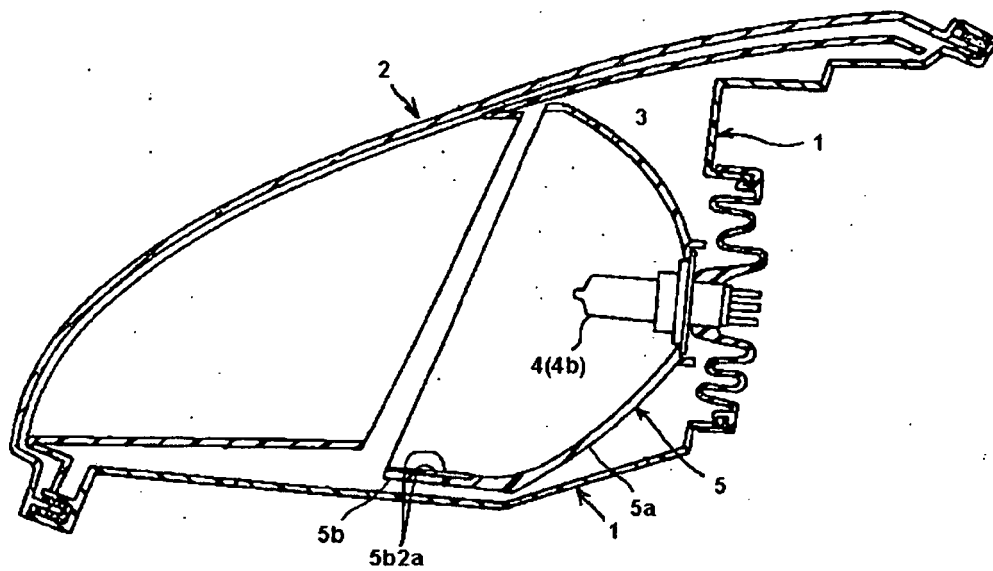


Fig. 4A

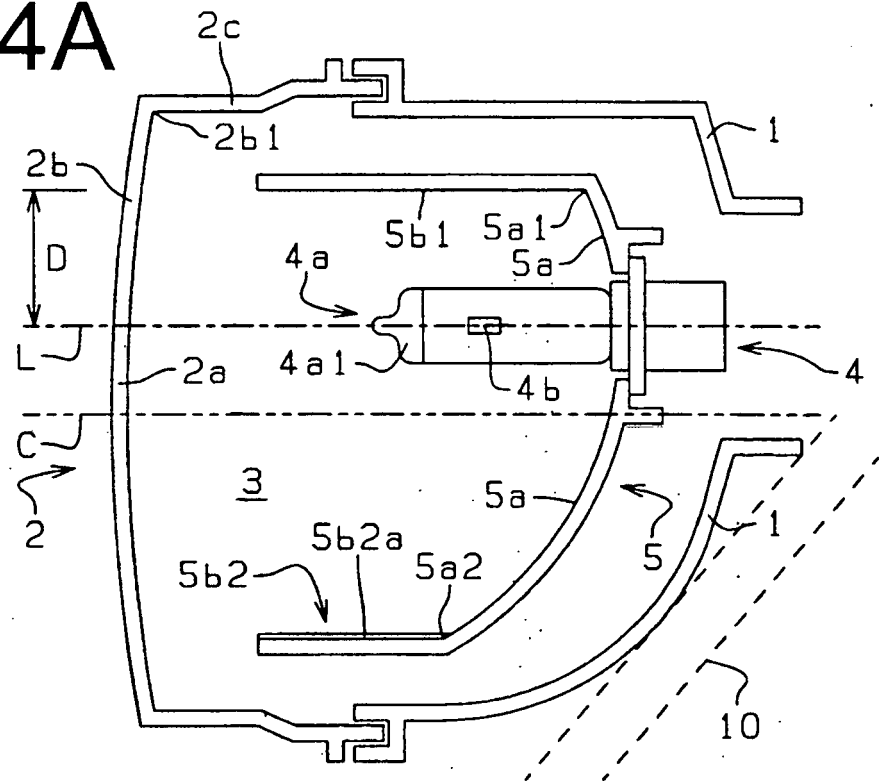


Fig. 4B

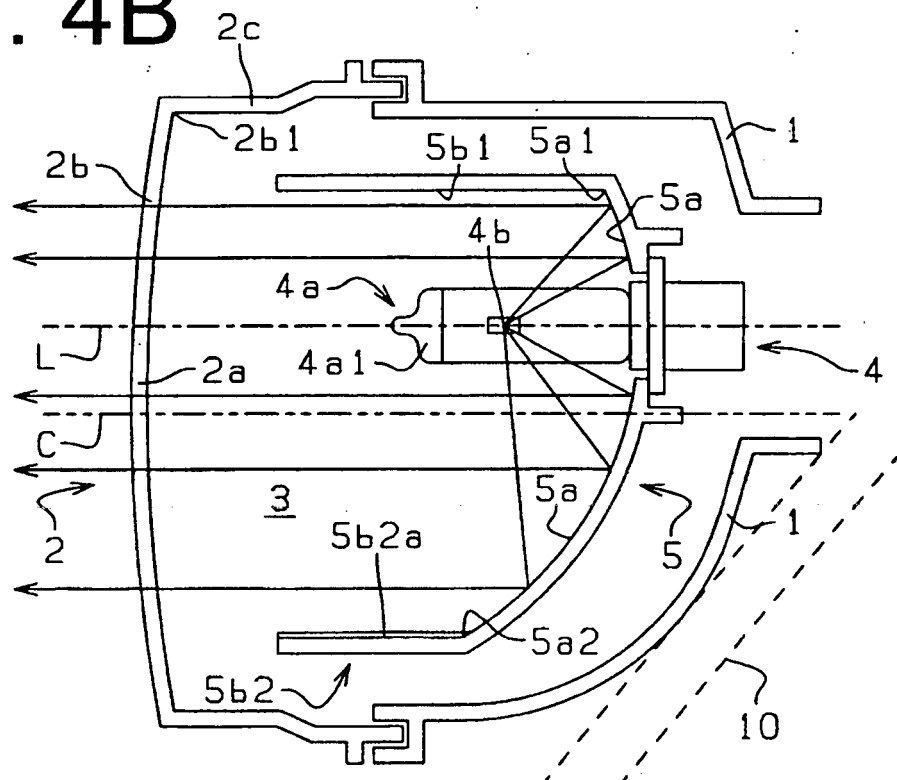


Fig. 5A

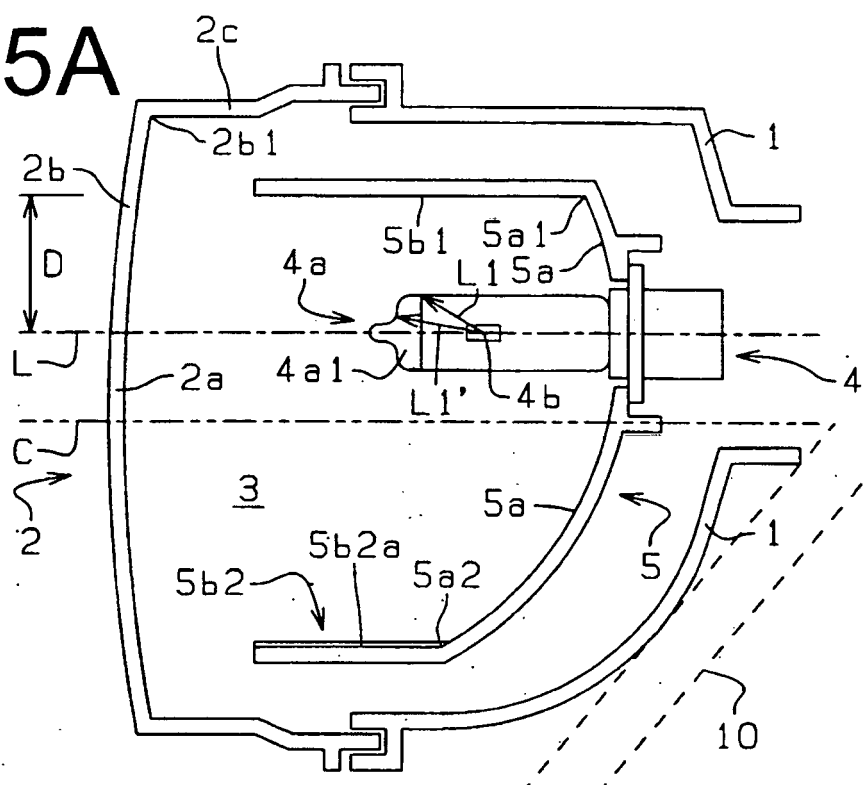


Fig. 5B

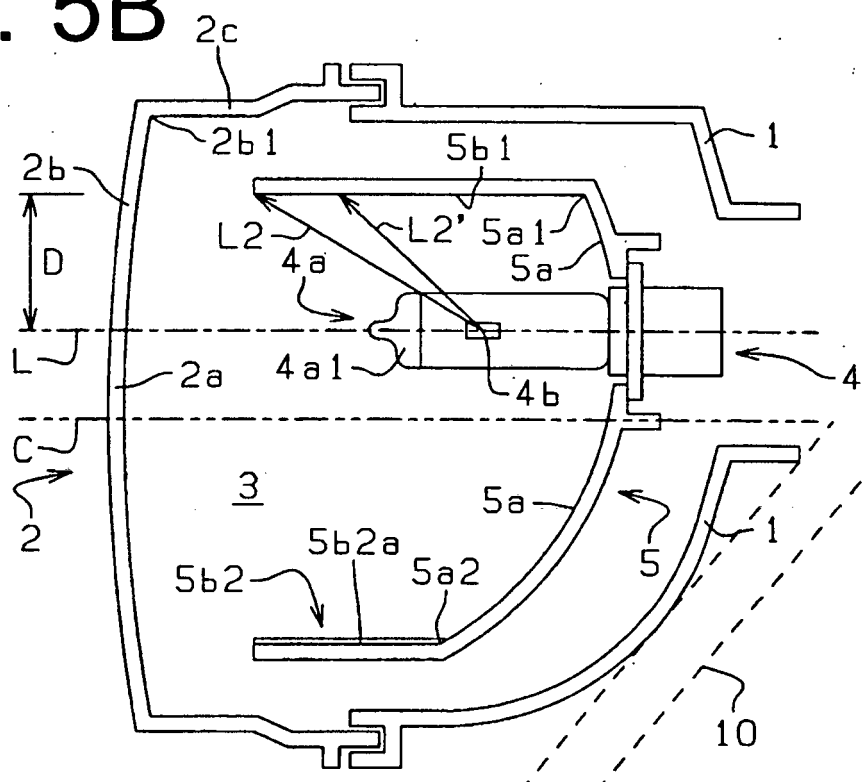


Fig. 6A

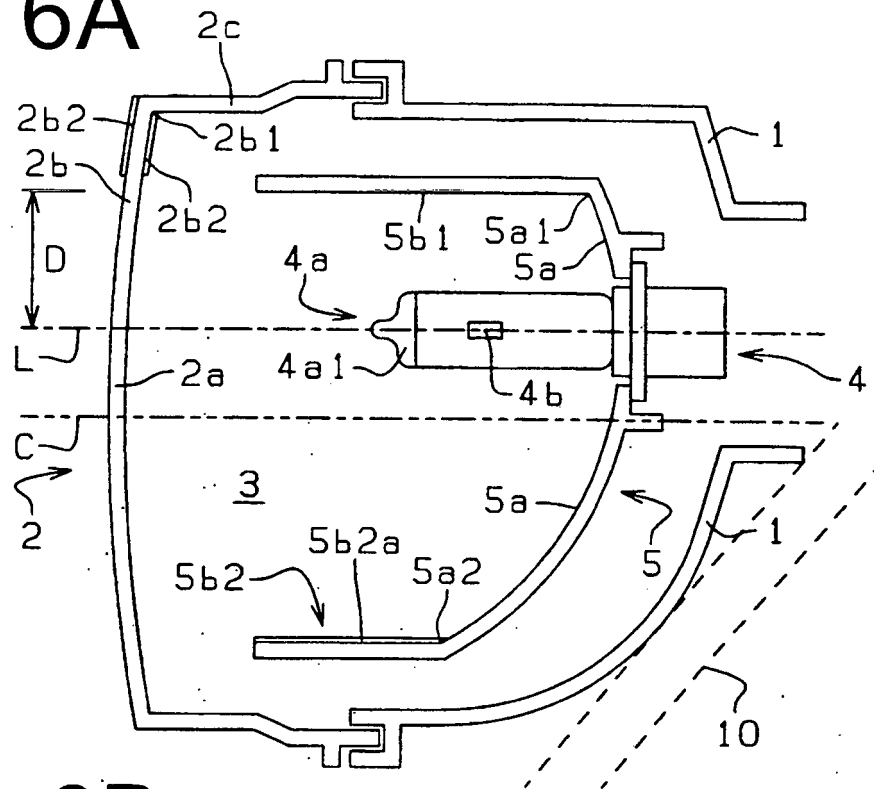


Fig. 6B

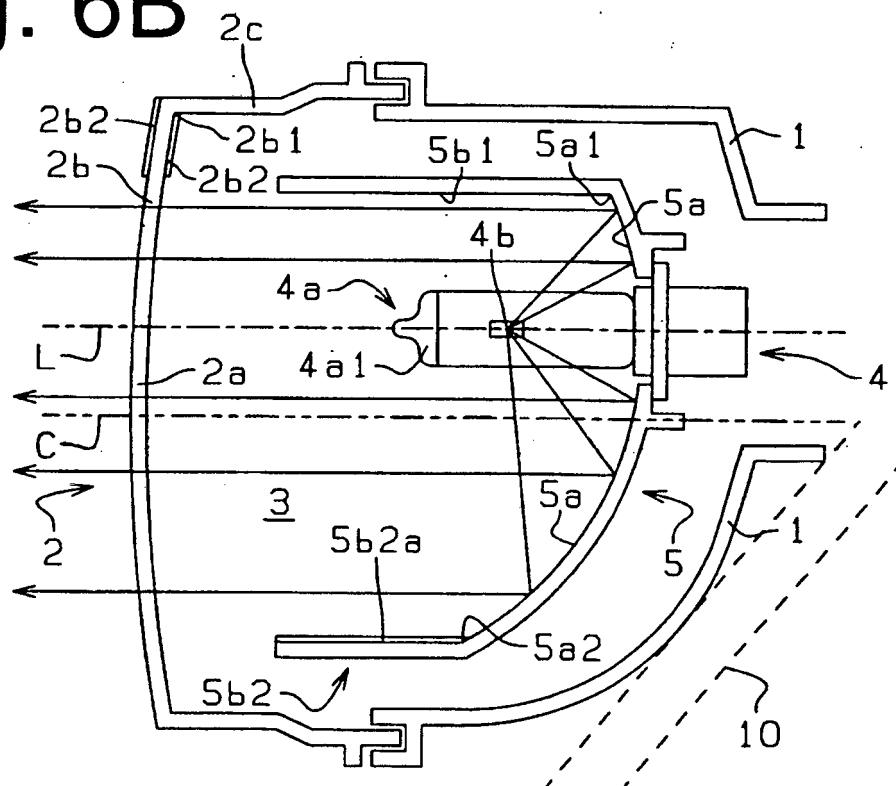


Fig. 7A

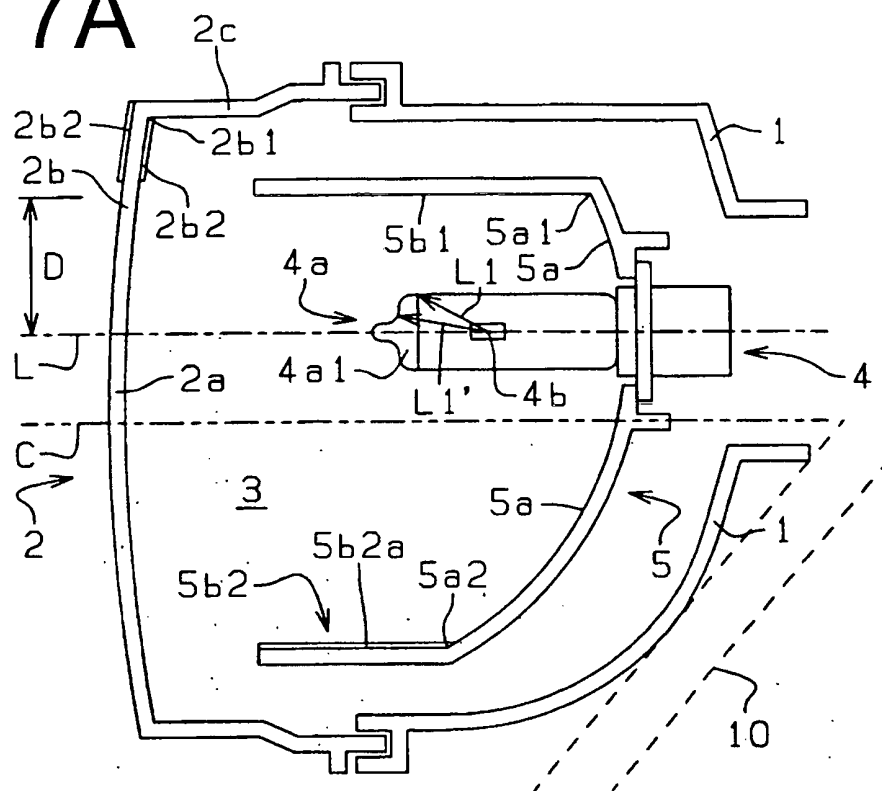


Fig. 7B

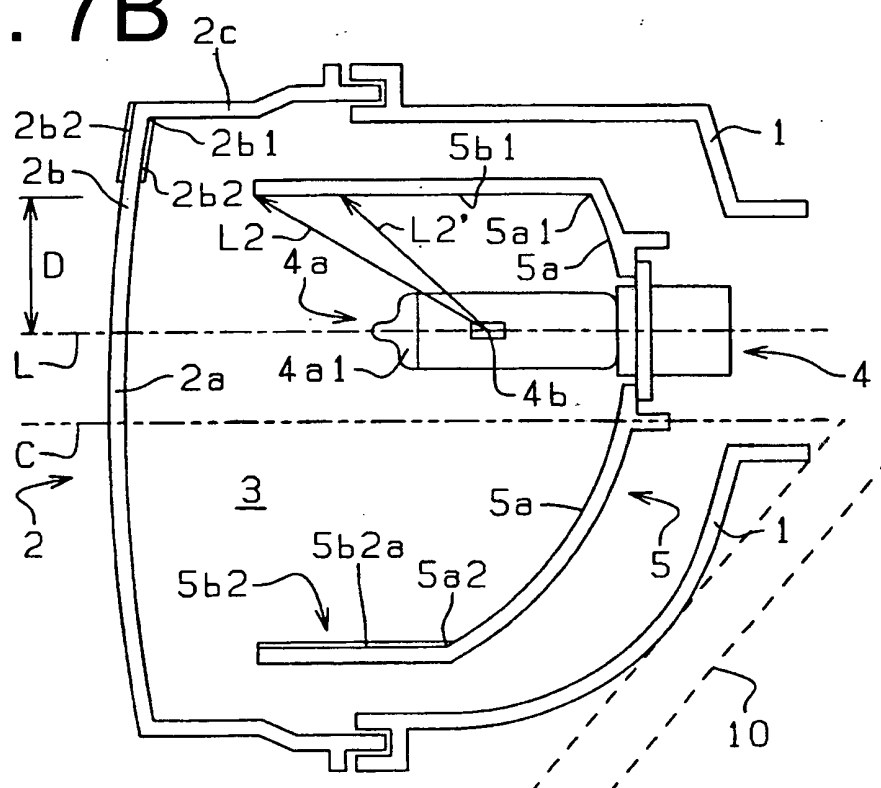


Fig. 8

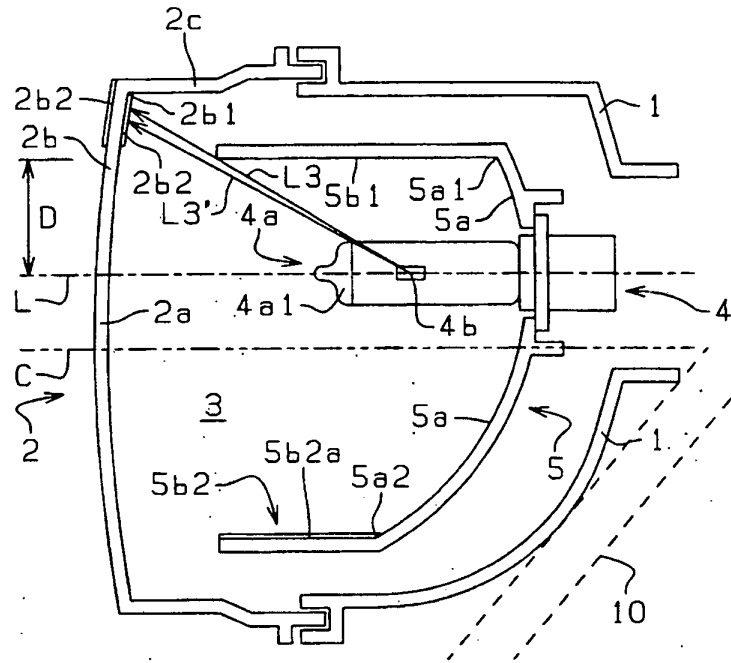
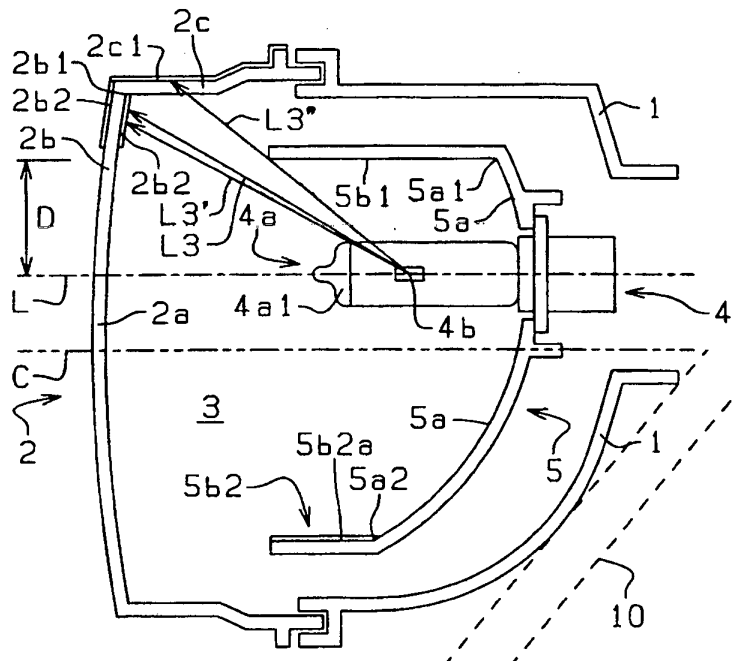


Fig. 9



REFERENCES CITED IN THE DESCRIPTION

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