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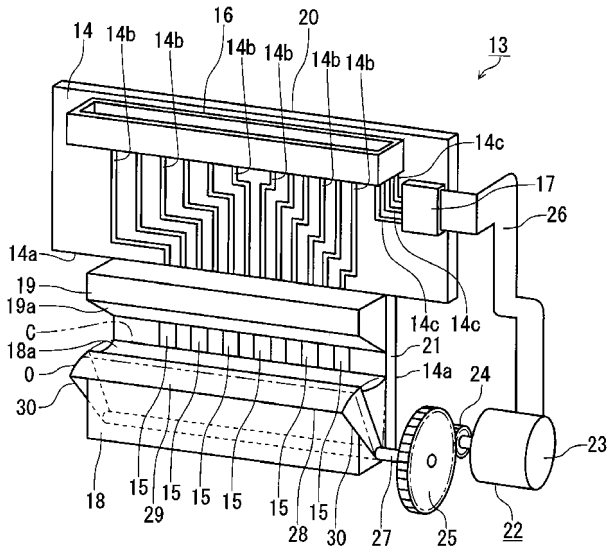
(54) Vehicle headlight

(57) The vehicle headlight (1) includes a light source (13) including: a circuit board (14) whose surface is directed toward a front area of the vehicle headlight; a plurality of semiconductor light emitting elements (15) arranged in line on the surface of the circuit board; a first reflector (19) disposed on the surface of the circuit board and configured to reflect the light emitted from the semiconductor light emitting elements toward the front area to form a lower portion (H1) of a high beam pattern; and a second reflector (18) disposed on the surface of the circuit board and configured to reflect the light emitted from the semiconductor light emitting elements toward the front area to form an upper portion (H2) of the high beam pattern, wherein the semiconductor light emitting elements are disposed between the first reflector and the second reflector; and a projection lens (32) configured to project the light emitted from the semiconductor light emitting elements toward the front area; and a changing means configured to change the upper portion (H2) of the high beam pattern by controlling an incident state of the light which is incident on the second reflector.

FIG. 2



EP 2 546 567 A2

Description

BACKGROUND

Technical Field

[0001] The present disclosure relates to a vehicle headlight.

Related Art

[0002] There is a vehicle headlight where a plurality of light sources is disposed in a lamp housing formed by a cover and a lamp body, some of the light sources are used as light sources emitting low beams, and the other light sources are used as light sources emitting high beams (for example, see JP-A-2008-37240).
A plurality of semiconductor light emitting elements, for example, light emitting diodes (LEDs) are used as the light sources emitting high beams.
[0003] The vehicle headlight disclosed in JP-A-2008-37240 is configured to control a so-called variable high beam (ADB: adaptive driving beam) that among the light sources emitting high beams, changes a high beam light distribution pattern by turning off light sources which illuminate an area where an oncoming vehicle or a pedestrian detected by the processing of an image taken by, for example, a camera are present.
It is possible to prevent the generation of glare light directed to an oncoming vehicle or a pedestrian by performing this control.
[0004] However, when the light sources, which illuminate an area where a pedestrian is present, in a vehicle headlight disclosed in JP-A-2008-37240 are turned off, it is difficult for a driver to visually recognize the pedestrian who is present in the area.

SUMMARY OF THE INVENTION

[0005] It is one of illustrative aspects of the present invention to prevent the generation of glare light given to a pedestrian while ensuring the improvement of a driver's visibility.
[0006] According to one or more illustrative aspects of the present invention, there is provided a vehicle headlight (1). The vehicle headlight (1) includes a light source (13) including: a circuit board (14) whose surface is directed toward a front area of the vehicle headlight; a plurality of semiconductor light emitting elements (15) arranged in line on the surface of the circuit board and configured to emit light; a first reflector (19) disposed on the surface of the circuit board and configured to reflect the light emitted from the semiconductor light emitting elements toward the front area to form a lower portion (H1) of a high beam pattern; and a second reflector (18) disposed on the surface of the circuit board and configured to reflect the light emitted from the semiconductor light emitting elements toward the front area to form an upper portion (H2) of the high beam pattern, wherein the semiconductor light emitting elements are disposed between the first reflector and the second reflector; and a projection lens (32) configured to project the light emitted from the semiconductor light emitting elements toward the front area; and a changing means configured to change the upper portion (H2) of the high beam pattern by controlling an incident state of the light which is incident on the second reflector.
[0007] Other aspects and advantages of the present invention will be apparent from the following description, the drawings and the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

Fig. 1 is a view showing a vehicle headlight according to a present embodiment of the invention and is a schematic longitudinal sectional view of the vehicle headlight;
Fig. 2 is an enlarged perspective view of a light source;
Fig. 3 is a view showing a high beam light distribution pattern;
Fig. 4 is a view comparatively showing the light source and the high beam light distribution pattern when a movable shade is positioned at a retreat position;
Fig. 5 is a view comparatively showing the light source and the high beam light distribution pattern when the movable shade is positioned at a blocking position;
Fig. 6 is an enlarged sectional view illustrating the motion of a movable shade when a fulcrum shaft is positioned in front of a lower reflector;
Fig. 7 is an enlarged sectional view illustrating the motion of a movable shade when a fulcrum shaft is positioned at a lower end portion of a circuit board.
Fig. 8 is an enlarged sectional view of a light source when a movable shade is linearly moved; and
Fig. 9 is an enlarged sectional view showing a modification of the light source.

DETAILED DESCRIPTION

[0009] Hereinafter, the same or equivalent components, members, and signals, which are shown in the respective drawings, are denoted by the same reference numerals, and the repeated description thereof will be appropriately omitted. Further, some of members, which are not important in the description, will be omitted in the respective drawings.
[0010] A vehicle headlight according to a present embodiment of the invention will be described below with reference to the accompanying drawings.
[0011] Vehicle headlights 1 are disposed and mounted on both left and right end portions of a front end portion

of a vehicle body.

[0012] As shown in Fig. 1, the vehicle headlight 1 includes, for example, a lamp body 2 that is opened toward the front side and a cover 3 that is mounted at the front end portion of the lamp body 2. An inner space of a lamp housing 4, which is formed by the lamp body 2 and the cover 3, is formed as a lamp chamber 5 and a lamp unit 6 is disposed in the lamp chamber 5.

[0013] A support 7 is disposed in the lamp chamber 5 to be tilted in a left-and-right direction and a front-and-rear direction by an optical axis adjuster 8.

[0014] The support 7 includes a base portion 9 that is made of a metal material having high thermal conductivity and faces the front and rear sides.

[0015] Supported portions 10, 10, and 10 are provided at both upper and lower end portions of the base portion 9 (only two supported portions 10 and 10 are shown in Fig. 1). Heat dissipating fins 11, 11, ..., which protrude rearward, are provided on the rear surface of the base portion 9 at an interval in the left-and-right direction.

[0016] A heat dissipating fan 12 is mounted on the rear surfaces of the heat dissipating fins 11, 11, ... that are provided on the base portion 9.

[0017] A light source 13 is mounted at the central portion of the front surface of the base portion 9.

[0018] As shown in Fig. 2, the light source 13 includes a circuit board 14, a plurality of semiconductor light emitting elements 15, 15, ..., a power supply connector 16, a branch connector 17, a lower reflector 18, and an upper reflector 19.

[0019] As shown in Fig. 2, the circuit board 14 is formed in a T shape and includes an upper portion 20 and a lower portion 21 of which the width is smaller than the width of the upper portion 20. Cutout portions 14a and 14a, which are opened toward the lower side and the lateral side and are formed by lower edges of both left and right side portions of the upper portion 20 and both left and right side edges of the lower portion 21, are formed at the circuit board 14.

[0020] The power supply connector 16 and the branch connector 17 are disposed on the upper portion 20 of the circuit board 14; and the semiconductor light emitting elements 15, 15, ..., the upper reflector 19, and the lower reflector 18 are disposed on the lower portion 21.

[0021] The semiconductor light emitting elements 15, 15, ... function as a surface light source that emits light, and are arranged side by side in the left-and-right direction so that light emitting surfaces face the front side.

[0022] The power supply connector 16 is disposed on the upper end portion of the upper portion 20, and is connected to the semiconductor light emitting elements 15, 15, ... by wiring patterns 14b, 14b, ... of the circuit board 14.

[0023] A connector portion of a wiring cord (not shown), which is connected to a control circuit (not shown), is connected to the power supply connector 16. Accordingly, power is supplied to the semiconductor light emitting elements 15, 15, ... from the control circuit through the wiring cord, the power supply connector 16, and the wiring patterns 14b, 14b, ...

[0024] The branch connector 17 is disposed on the side portion of the upper portion 20 and is connected to the power supply connector 16 by wiring patterns 14c, 14c, ... of the circuit board 14.

[0025] As shown in Fig. 2, the lower and upper reflectors 18 and 19 are disposed on the lower and upper sides with the semiconductor light emitting elements 15, 15, ... interposed respectively therebetween. The lower and upper reflectors 18 and 19 include surfaces that are positioned close to the semiconductor light emitting elements 15, 15, ... and respectively face substantially upper and lower sides. These surfaces are respectively formed as reflective surfaces 18a and 19a. The reflective surface 18a is formed of, for example, a paraboloid and the reflective surface 19a is formed of, for example, a hyperboloid.

[0026] The reflective surfaces 18a and 19a reflect light, which is emitted from the semiconductor light emitting elements 15, 15, ..., toward the front side.

[0027] A part of a shade drive mechanism 22 is disposed in a space, which is formed by the cutout portion 14a, on the lateral side of the lower portion 21 of the circuit board 14. The shade drive mechanism 22 includes a drive motor 23, a drive gear 24, a transmission gear 25, and a flat cable 26.

[0028] The drive gear 24 is fixed to an output shaft of the drive motor 23, and meshes with the transmission gear 25. The drive motor 23 is connected to the branch connector 17 by the flat cable 26. Accordingly, a driving voltage is supplied to the drive motor 23 from the control circuit through the wiring cord, the power supply connector 16, the wiring patterns 14c, 14c, ..., the branch connector 17, and the flat cable 26.

[0029] As described above, the power supply connector 16, which is used to supply power to the semiconductor light emitting elements 15, 15, ..., is connected to the drive motor 23 through the branch connector 17 and functions as a connector that is used to supply a driving voltage to the drive motor 23. The power supply connector 16 is integrated as a connector that is used to supply power to the semiconductor light emitting elements 15, 15, ... and used to supply a driving voltage to the drive motor 23.

[0030] Accordingly, it is not necessary to separately provide the wiring cord and the connector that are used to supply power to the semiconductor light emitting elements 15, 15, ... from the control circuit and the wiring cord and the connector that are used to supply a driving voltage to the drive motor 23 from the control circuit; and it is possible to simplify the structure of the vehicle headlight 1, to reduce the size of the vehicle headlight, and to reduce the manufacturing cost of the vehicle headlight.

[0031] Further, in the vehicle headlight 1, the cutout portions 14a are formed at the circuit board 14 and a part of the shade drive mechanism 22 is disposed in the space formed by the cutout portion 14a.

[0032] Accordingly, since the shade drive mechanism 22 is not disposed so as to significantly protrude toward the lateral side, it is possible to reduce the size of the vehicle headlight 1 by that extent.

[0033] A fulcrum shaft 27, which extends in the left-and-right direction, is rotatably supported at the lower end portion of the circuit board 14. One end portion of the fulcrum shaft 27 is connected to the transmission gear 25. A movable shade 28 is mounted on the fulcrum shaft 27.

[0034] The movable shade 28 is formed so that a blocking surface portion 29 extending in the left-and-right direction is formed integrally with supported surface portions 30 and 30 that respectively protrude from both left and right end portions of the blocking surface portion 29 in the same direction orthogonal to the blocking surface portion.

[0035] Tip portions of the supported surface portions 30 and 30 of the movable shade 28 are mounted on the fulcrum shaft 27. When the output shaft of the drive motor 23 is rotated, the fulcrum shaft 27 is rotated through the drive gear 24 and the transmission gear 25. Accordingly, the movable shade 28 is rotated with the rotation of the fulcrum shaft 27 in a direction corresponding to the rotational direction of the output shaft of the drive motor 23.

[0036] The movable shade 28 is rotated between a blocking position C which is a rear position and at which the movable shade blocks light entering the lower reflector 18 and a retreat position O which is a front position and at which the movable shade releases the blocking of the light entering the lower reflector 18. The incident state of the light, which is emitted from the semiconductor light emitting elements 15, 15 ... and enters the lower reflector 18, is controlled according to the position of the movable shade 28.

[0037] The blocking surface portion 29 is formed in the shape of a gently arcuate surface that is convex toward the outside. When the movable shade 28 is positioned at the blocking position C, the reflective surface 18a of the lower reflector 18 is covered with the blocking surface portion 29. Meanwhile, when the movable shade 28 is positioned at the retreat position O, light, which is emitted from the semiconductor light emitting elements 15, 15, ... and directed to the reflective surface 18a, is not blocked by the blocking surface portion 29.

[0038] A lens holder 31 is mounted on the front surface of the base portion 9 (see Fig. 1). The lens holder 31 is formed substantially in the shape of a cylinder that extends in the front-and-rear direction, and is mounted on the base portion 9 so as to cover the semiconductor light emitting elements 15, 15, ...

[0039] A projection lens 32 is mounted on the front end portion of the lens holder 31. The projection lens 32 is formed so that a lens portion 32a is formed integrally with a flange portion 32b. The lens portion 32a is formed substantially in the shape of a hemisphere that is convex toward the front side, and the flange portion 32b protrudes from the outer periphery of the lens portion 32a. The projection lens 32 has a function of inverting an image, which is formed on a focal plane including a rear focus, and projecting light, which is emitted from the semiconductor light emitting elements 15, 15, ..., to the front side.

[0040] In the vehicle headlight 1, the support 7, the heat dissipating fins 11, 11, ..., the heat dissipating fan 12, the light source 13, the shade drive mechanism 22, the movable shade 28, the lens holder 31, and the projection lens 32 form the lamp unit 6 that emits a high beam illuminating an area in the distance.

[0041] The optical axis adjuster 8 includes aiming screws 33 and 33 (only one aiming screw 33 is shown in Fig. 1.) and a leveling actuator 34.

[0042] The aiming screws 33 and 33 are positioned in the upper portion of the lamp chamber 5 so as to be spaced apart from each other in the left-and-right direction, and include rotary operation portions 35 and 35 and shaft portions 36 and 36 that protrude forward from the rotary operation portions 35 and 35, respectively. The front end portions of the shaft portions 36 and 36 are respectively formed as screw shaft portions 36a and 36a.

[0043] The respective rotary operation portions 35 and 35 of the aiming screws 33 and 33 are rotatably supported at the rear end portion of the lamp body 2, and the screw shaft portions 36a and 36a are respectively threadably engaged with the upper supported portions 10 and 10 of the support 7.

[0044] The leveling actuator 34 includes a drive portion 37 and a shaft portion 38 that protrudes forward from the drive portion 37. A screw shaft portion 38a is formed at the shaft portion 38. The screw shaft portion 38a of the leveling actuator 34 is threadably engaged with the lower supported portion 10 of the support 7.

[0045] When the aiming screw 33 connected to the supported portion 10 is rotated by the operation of the rotary operation portion 35 in the vehicle headlight 1, the support 7 is tilted about the other supported portions 10 and 10 as a fulcrum in the direction corresponding to the rotational direction of the aiming screw 33. Accordingly, adjustment (aiming adjustment) of the optical axis of the lamp unit 6 is performed.

[0046] Further, when the shaft portion 38 connected to the supported portion 10 is rotated by the driving force of the drive portion 37, the support 7 is tilted up and down about the other supported portions 10 and 10 as a fulcrum in the direction corresponding to the rotational direction of the shaft portion 38. Accordingly, adjustment (leveling adjustment) of the optical axis of the lamp unit 6 is performed.

[0047] Since a vehicle is provided with a camera (not shown), which includes, for example, a CCD (Charge Coupled Device) or the like, as an imaging element, the image of a high beam irradiation area (see a light distribution pattern P1 of Fig. 3) is regularly taken by the camera. When the image of the high beam irradiation area is taken by the camera, image data is created and the presence of an oncoming vehicle or a pedestrian 100,

which is present in the high beam irradiation area, is detected by image processing.

[0048] Meanwhile, the upper portion 20 of the circuit board 14, the respective portions disposed on the upper portion 20, the shade drive mechanism 22, and the fulcrum shaft 27 have been shown in Fig. 2. However, these respective portions are not shown in Fig. 3 and the respective drawings subsequent to Fig. 3.

[0049] In the vehicle headlight 1 having the above-mentioned structure, light is emitted from the semiconductor light emitting elements 15, 15, ... when a driving voltage is applied to the light source 13 by the drive of a lighting circuit (not shown).

[0050] The light emitted from the semiconductor light emitting elements 15, 15, ... is directed to the front side or reflected by the reflective surfaces 18a and 19a, is focused on the focal plane including the rear focus of the projection lens 32, penetrates the projection lens 32 and the cover 3, and is emitted forward as irradiation light for a high beam. In this case, the image of the high beam irradiation area is also taken by the above-mentioned camera.

[0051] As shown in Fig. 3, the high beam light distribution pattern P1 includes a pattern H1, a pattern H2, and a pattern H3. The pattern H1 is formed by light that is emitted from the semiconductor light emitting elements 15, 15, ... and reflected by the reflective surface 19a. The pattern H2 is formed by light that is reflected by the reflective surface 18a. The pattern H3 is formed by light that is not reflected by any of the reflective surfaces 18a and 19a.

[0052] The pattern H1 is a lower portion of the light distribution pattern P1. The pattern H2 is an upper portion of the light distribution pattern P1, and is formed by light that irradiates the upper portion of the pedestrian 100. The pattern H3 is a middle portion of the light distribution pattern P1 in a vertical direction.

[0053] When the presence of a pedestrian 100 is not detected in the high beam irradiation area by the above-mentioned image processing while the vehicle headlight 1 emits a high beam, the movable shade 28 is positioned at the retreat position O (see Fig. 4). Meanwhile, when the presence of a pedestrian 100 is detected in the high beam irradiation area, the movable shade 28 is rotated to the blocking position C from the retreat position O and the movable shade 28 is held at the blocking position C (see Fig. 5) while the presence of the pedestrian 100 is detected.

[0054] Since the reflective surface 18a is not covered with the blocking surface portion 29 when the blocking surface portion 29 is positioned at the retreat position O, the light distribution pattern P1 including the pattern H1, the pattern H2, and the pattern H3 is formed (see Fig. 4). Meanwhile, since the reflective surface 18a is covered with the blocking surface portion 29 when the blocking surface portion 29 is positioned at the blocking position C, the pattern H2 is not formed and a light distribution pattern P2 including the pattern H1 and the pattern H3 is formed (see Fig. 5). Accordingly, when the presence of the pedestrian 100 is detected, the light distribution pattern P2 is formed, so that light does not irradiate the upper portion of the pedestrian 100.

[0055] In the light source 13, the incident state of light, which enters the lower reflector 18, is controlled by the movable shade 28 that is moved between the blocking position C at which the movable shade covers the lower reflector 18 and the retreat position O at which the movable shade releases the covering of the lower reflector 18. Accordingly, it is possible to more reliably control the incident state of light, which enters the lower reflector 18, using a simple structure.

[0056] Further, since the movable shade 28 is rotated and moved between the retreat position O and the blocking position C, the movement space of the movable shade 28 in the front-and-rear direction is small. Accordingly, it is possible to reduce the size of the vehicle headlight 1.

[0057] Meanwhile, an example where the fulcrum shaft 27 is supported at the lower end portion of the circuit board 14 in the vehicle headlight 1 has been described above. However, the fulcrum shaft 27 may be adapted to be supported in front of the lower reflector 18 as shown in Fig. 6.

[0058] Meanwhile, if the fulcrum shaft 27 is adapted to be supported in front of the lower reflector 18, a part of a rotation locus T1 (see a portion shown by a broken line of Fig. 6) of the blocking surface portion 29 is present in front of the light emitting surfaces of the semiconductor light emitting elements 15, 15, ... Accordingly, since a part of the light, which is emitted from the semiconductor light emitting elements 15, 15, ... and is not directed to the reflective surface 18a, is blocked by the blocking surface portion 29 while the movable shade 28 is rotated, the area of the light distribution pattern is changed so as to be increased after being reduced once when the movable shade 28 is rotated. For this reason, there is a concern that a driver may feel some discomfort.

[0059] Accordingly, if the fulcrum shaft 27 is supported at the lower end portion of the circuit board 14 as described above so that a rotation locus T2 of the blocking surface portion 29 is positioned below the blocking position C (see Fig. 7), light, which is emitted from the semiconductor light emitting elements 15, 15, ... and is not directed to the reflective surface 18a, is not blocked when the movable shade 28 is rotated. For this reason, it is possible to prevent a driver of a vehicle from feeling discomfort.

[0060] Further, the rotation locus T2 of the blocking surface portion 29 is positioned below the blocking position C, and the blocking surface portion 29 is not moved down after being moved above the blocking position C once when the movable shade 28 is rotated. Accordingly, it is possible to make a rotation angle of the movable shade 28 between the retreat position O and the blocking position C small.

[0061] Meanwhile, an example where the movable

shade 28 of the vehicle headlight 1 is rotated and moved between the retreat position O and the blocking position C has been described above, but the movable shade 28 is not limited to a rotating structure. For example, as shown in Fig. 8, the movable shade 28 may be adapted to be linearly moved between the retreat position O and the blocking position C in the direction shown by an arrow.

[0062] Next, a modification of the light source will be described (see Fig. 9).

[0063] Meanwhile, a light source 13A according to the following modification is different from the light source 13 in that light is not controlled by a movable shade and a lower reflector is moved up and down to control light.

[0064] Accordingly, only portions of the light source 13A, which are different from the portions of the light source 13, will be described in detail. The other portions of the light source 13A will be denoted by the same reference numerals as the reference numerals of the same portions as the portions of the light source 13, and will not be described or will be briefly described as necessary.

[0065] The light source 13A includes a circuit board 14, a plurality of semiconductor light emitting elements 15, 15, ..., a lower reflector 18A, and an upper reflector 19.

[0066] A vertical drive portion (not shown) is disposed below the circuit board 14.

[0067] The lower reflector 18A includes a reflective surface 18a that has the same structure as the structure of the reflective surface of the lower reflector 18, and is moved up and down on the front surface of the circuit board 14 by the vertical drive portion.

[0068] The lower reflector 18A is moved between a first position H at which the reflective surface 18a is positioned adjacent to the semiconductor light emitting elements 15, 15, ... and a second position L at which the reflective surface is positioned below the first position H so as to be spaced apart from the semiconductor light emitting elements 15, 15, ...

[0069] When the lower reflector 18A is positioned at the first position H, a pattern H2 of a light distribution pattern P1 is formed by the light that is emitted from the semiconductor light emitting elements 15, 15, ... and reflected by the reflective surface 18a (see Fig. 3). Meanwhile, since the light emitted from the semiconductor light emitting elements 15, 15, ... is not reflected by the reflective surface 18a when the lower reflector 18A is positioned at the second position L, the pattern H2 is not formed and a light distribution pattern P2 including a pattern H1 and a pattern H3 is formed (see Fig. 5).

[0070] If the presence of a pedestrian 100 is not detected when a high beam is emitted from the vehicle headlight 1 of which the lower reflector 18A is adapted to be moved in the vertical direction, the lower reflector 18A is positioned at the first position H. Meanwhile, if the presence of a pedestrian 100 is detected, the lower reflector 18A is moved to the second position L from the first position H. While the presence of the pedestrian 100 is detected, the lower reflector 18A is held at the second position L and the light distribution pattern P2 is formed. Accordingly, when the presence of the pedestrian 100 is detected, the light distribution pattern P2 is formed, so that light is not emitted to the upper portion of the pedestrian 100.

[0071] The lower reflector 18A of the light source 13A is moved, so that the incident state of light entering the lower reflector 18A is controlled. Accordingly, a special member, which controls the incident state of light entering the lower reflector 18A, is not needed. Therefore, it is possible to reduce the number of parts and to simplify the structure.

[0072] As described above, the vehicle headlight 1 is adapted to change the formation of the upper pattern H2 of the high beam light distribution pattern P1 or P2 by controlling the incident state of light that is emitted from the semiconductor light emitting elements 15, 15, ... and enters the lower reflector 18 or 18A.

[0073] Accordingly, since control is performed so that light does not irradiate the upper portion of a pedestrian 100 when the presence of the pedestrian 100 is not detected, it is possible to prevent the generation of glare light directed to the pedestrian 100 after ensuring the improvement of driver's visibility.

[0074] All of the shapes and structures of the respective portions shown in the above-mentioned preferred embodiment are merely illustrative when the invention is embodied, and the technical scope of the invention should not be interpreted in a limited way.

Claims

1. A vehicle headlight (1) comprising:

a light source (13) comprising:

a circuit board (14) whose surface is directed toward a front area of the vehicle headlight;
a plurality of semiconductor light emitting elements (15) arranged in line on the surface of the circuit board and configured to emit light;
a first reflector (19) disposed on the surface of the circuit board and configured to reflect the light emitted from the semiconductor light emitting elements toward the front area to form a lower portion (H1) of a high beam pattern; and
a second reflector (18) disposed on the surface of the circuit board and configured to reflect the light emitted from the semiconductor light emitting elements toward the front area to form an upper portion (H2) of the high beam pattern, wherein the semiconductor light emitting elements are disposed between the first reflector and the

second reflector; and

a projection lens (32) configured to project the light emitted from the semiconductor light emitting elements toward the front area; and
a changing means configured to change the upper portion (H2) of the high beam pattern by controlling an incident state of the light which is incident on the second reflector.

2. The vehicle headlight according to claim 1,
wherein said changing means is a movable shade configured to move between a first position (C) and a second position (O),
wherein the movable shade covers a light incident surface (18a) of the second reflector (18) at the first position (C), and
wherein the movable shade does not cover the light incident surface of the second reflector at the second position (O).

3. The vehicle headlight according to claim 1,
wherein said changing means is configured to move the second reflector (18) to change a distance between the first reflector (19) and the second reflector (18) in a direction parallel to the surface of the circuit board (14).

4. The vehicle headlight according to claim 2,
wherein when the movable shade is in the first position (C), the upper portion (H2) of the high beam pattern is not formed by the second reflector, and
wherein when the movable shade is in the second position (O), the upper portion (H2) of the high beam pattern is formed by the second reflector.

5. The vehicle headlight according to claim 3,
wherein when the distance between the first reflector (19) and the second reflector (18) is the largest one, the upper portion (H2) of the high beam pattern is not formed by the second reflector.
wherein when the distance between the first reflector (19) and the second reflector (18) is the shortest one, the upper portion (H2) of the high beam pattern is formed by the second reflector.

FIG. 1

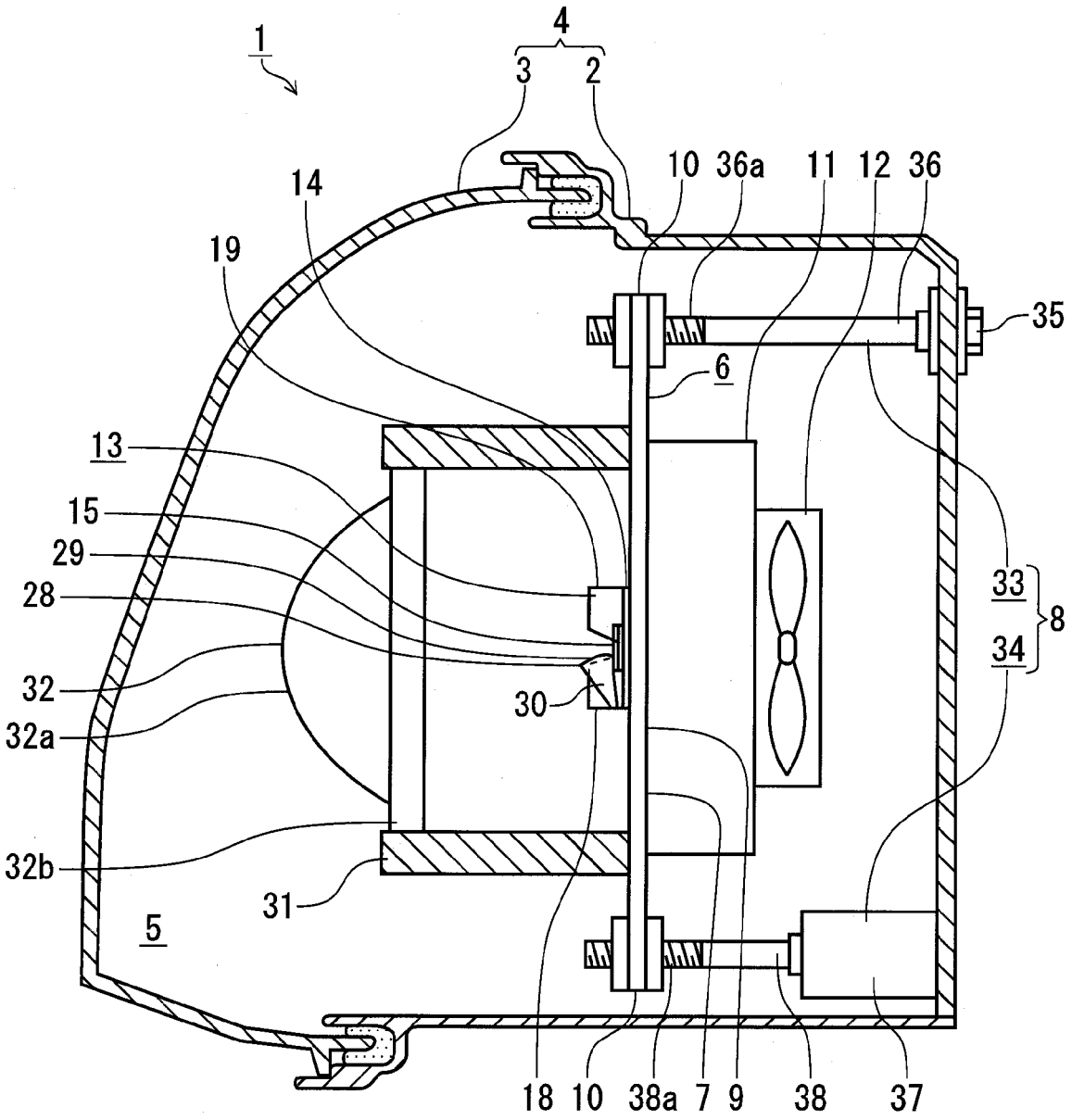

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FIG. 2

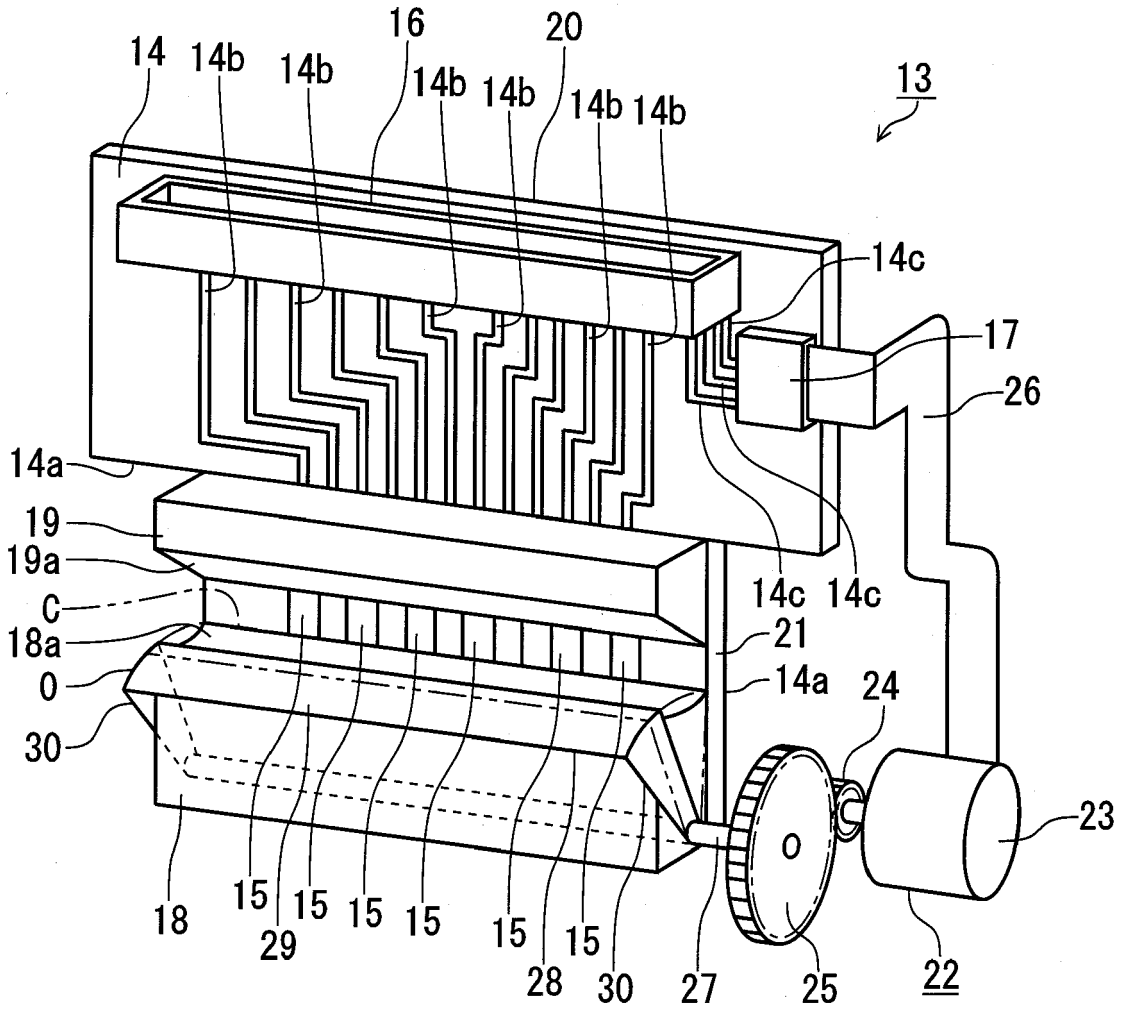
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FIG. 3

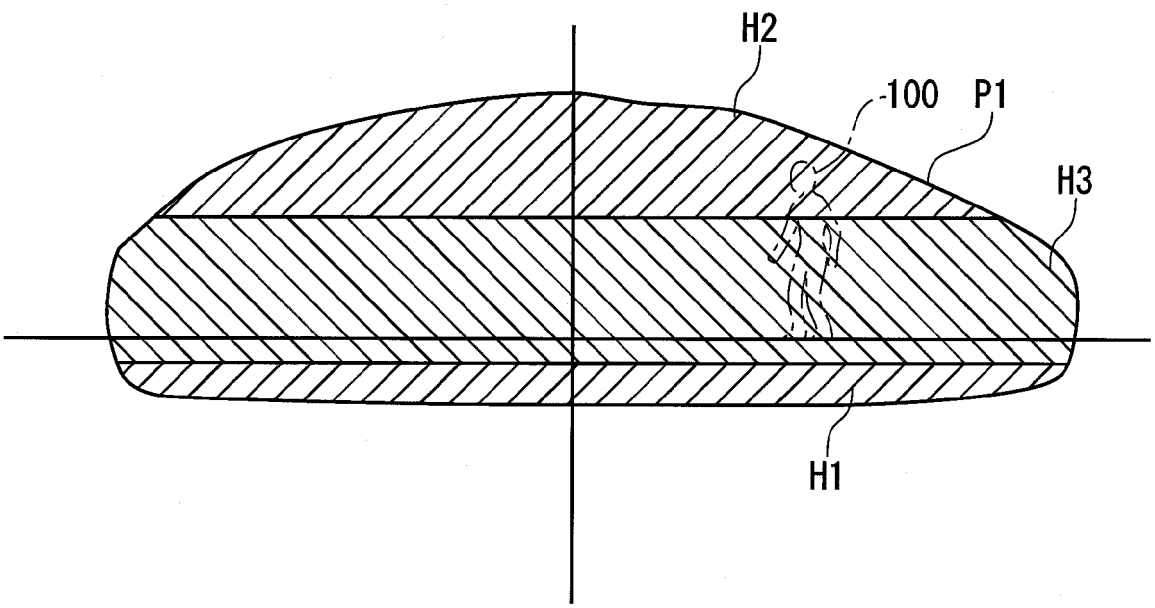
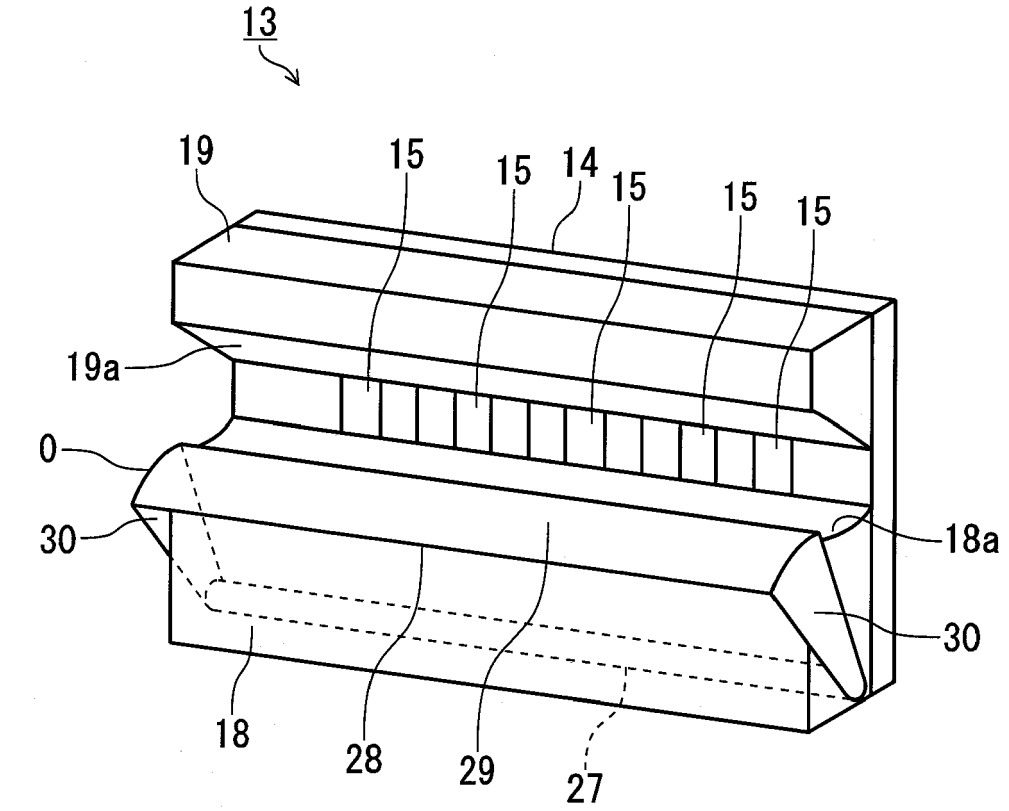


FIG. 4



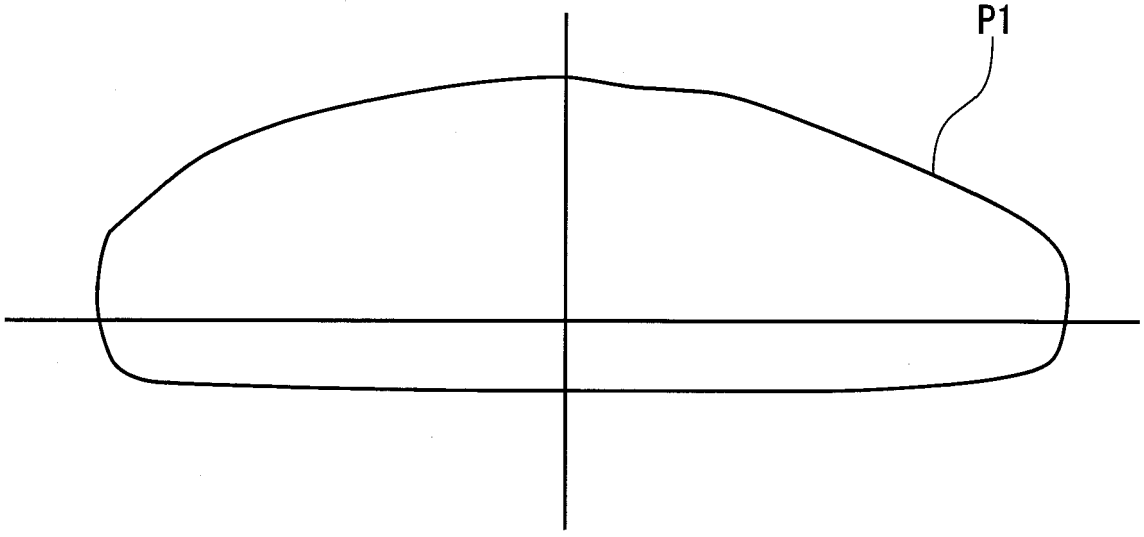
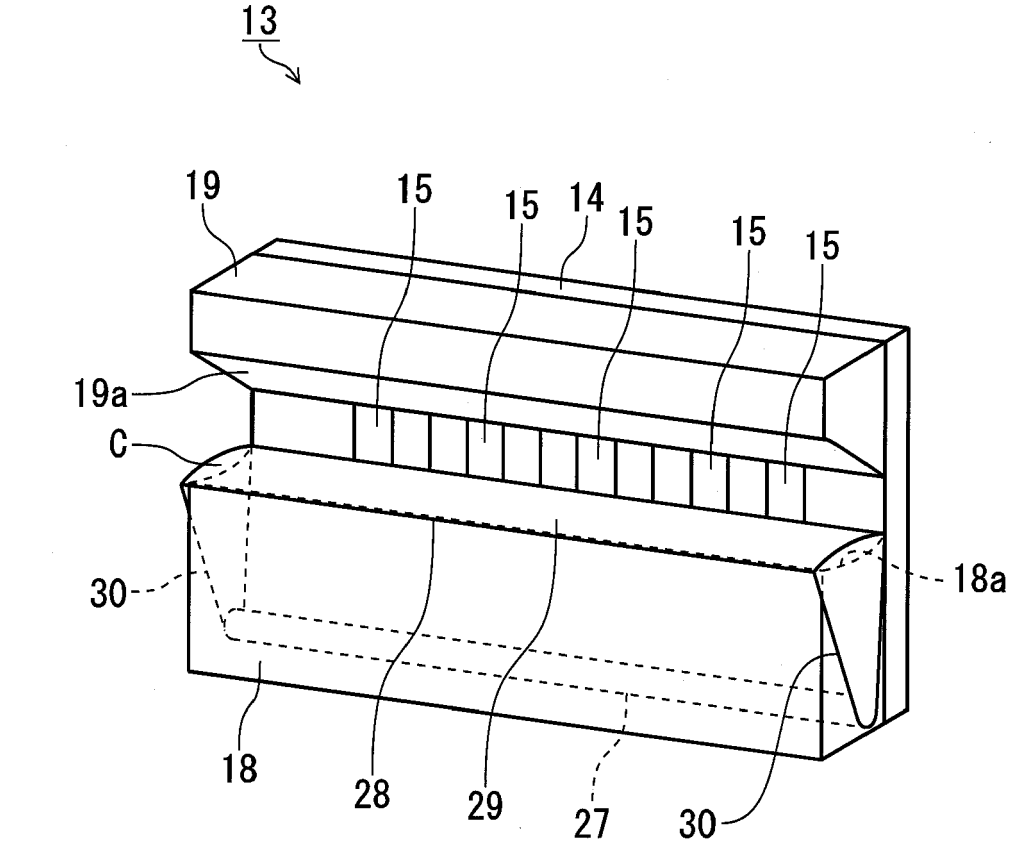


FIG. 5



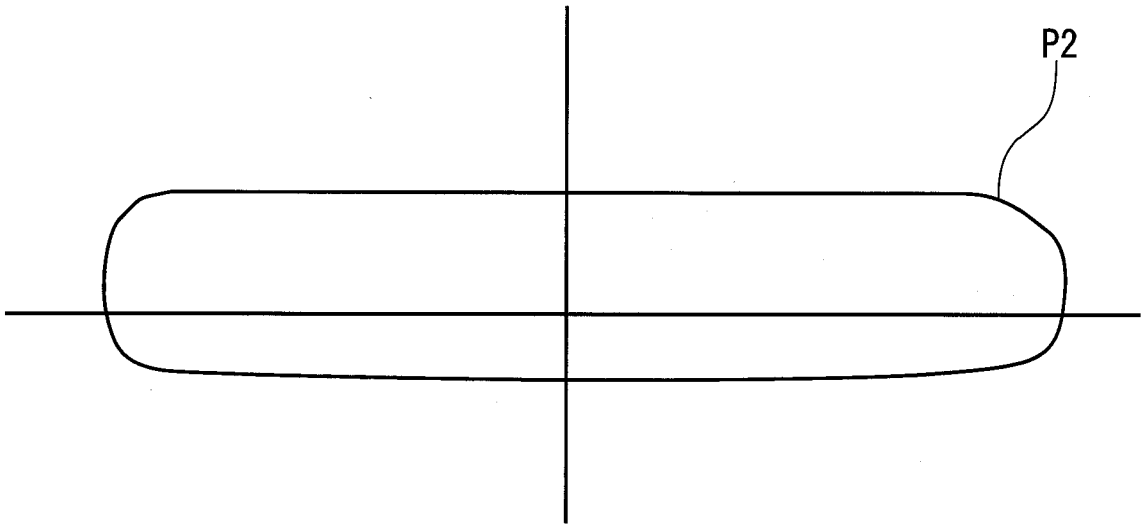


FIG. 6

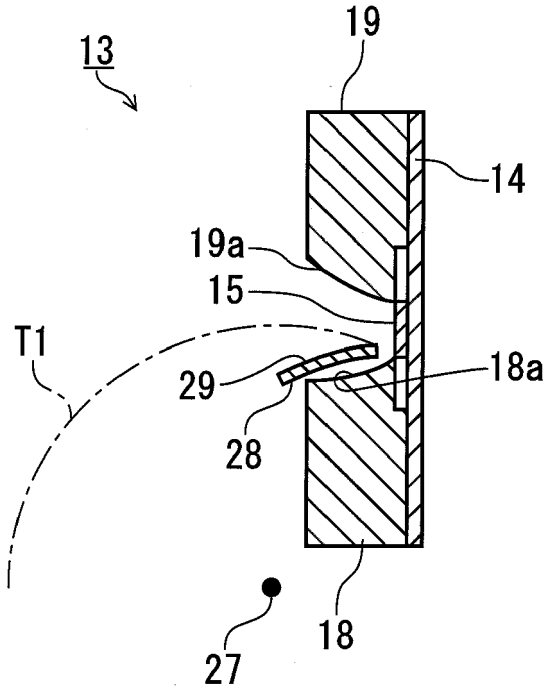


FIG. 7

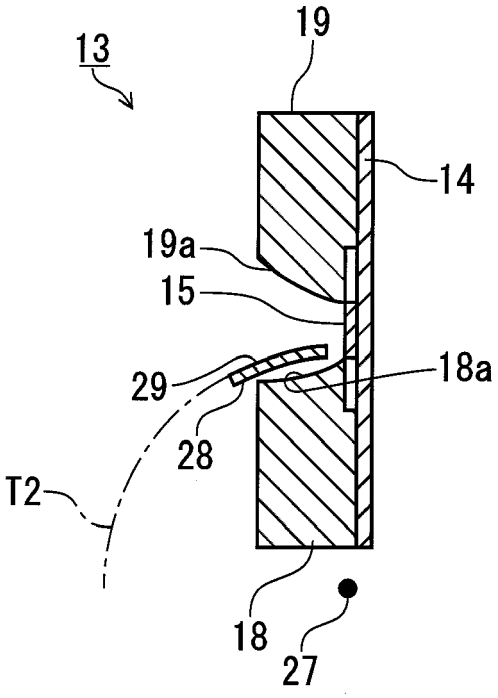


FIG. 8

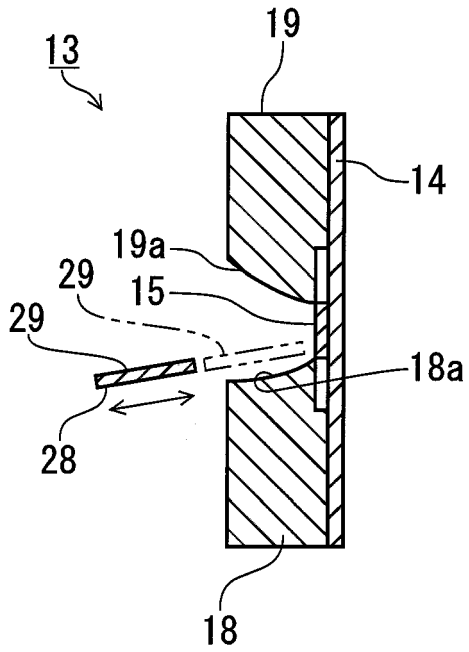
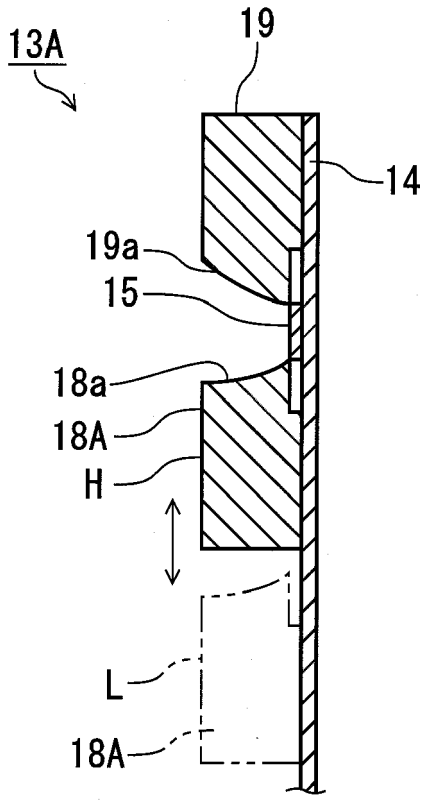


FIG. 9



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2008037240 A **[0002] [0003] [0004]**