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(54) **Inclination adjustment structure of lamp**

Neigungsverstellungsstruktur einer Lampe

Structure d'ajustement d'inclinaison de lampe

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(73) Proprietor: **Delta Electronics, Inc.**
Taoyuan County 32063 (TW)

(72) Inventors:
- **Huang, Wu-Chi**
  32063 Taoyuan County (TW)
- **Chen, Li-Ming**
  32063 Taoyuan County (TW)

(74) Representative: **dompatent von Kreisler Selting Werner -**
Partnerschaft von Patent- und Rechtsanwälten mbB
Deichmannhaus am Dom
Bahnhofsvorplatz 1
50667 Köln (DE)

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Description

BACKGROUND

[0001] The present invention is related to lamps, particularly an inclination adjustment structure of road lamp for convenient adjustment.

DESCRIPTION OF RELATED ART

[0002] Owning to the improvement of the light emitting diode (LED) manufacturing technic, LEDs are wildly applied to road or outdoor illumination. A LED light source is generally included of a planar illumination consisted of multiple LED chips. A lens is commonly provided on the conventional LED road lamp to adjust light-projection shape and direction of the illumination.

[0003] There are various illumination requirements corresponding to various applied locations, and it is not economic to design various lenses corresponding to each location. Therefore, an inclination adjustment structure is required for the LED road lamp. Conventional means for adjusting light-projection angle of the lamp are angle blocks, racks (disclosed in CN20168242U patent) and pivoting structures (disclosed in CN201875579U patent). Corresponding to various applied locations, various angle blocks have to be designed. Furthermore, the angle blocks are inconvenient to install. The racks and the pivoting structures are not able to provide sufficient support to the road lamp.

[0004] US 3387866 discloses luminaire with adjustable mounting means for securing the luminaire to a pipe support comprises an elongated luminaire housing and adjustable slipfitter means arranged near the rear end of the housing comprising first arcuate bearing on the housing arranged symmetrical about an axis transverse the longitudinal axis of the housing, a second bearing adjustably secured to the first bearing for movement relative thereto to selected positioned along an arcuate path about the transverse axis, the second bearing having an upper surface portion engaging the first arcuate bearing and lower surface portion engangeable with one side of the pipe support, and clamping means adjustably secured to the housing independent of the second bearing and engageable with the opposite side of the pipe support for clamping the housing to the pipe support, the clamping means being operable from either inside or outside the housing.

SUMMARY

[0005] The purpose of the present invention is providing an inclination adjustment structure of lamp which is convenient to be adjusted.

[0006] In order to make the above purpose, an inclination adjustment structure of road lamp including a main body and a positioning sleeve is provided in the present invention. The main body has a plurality of positioning recesses arranged in juxtaposition and a supporting surface. A positioning plate is formed at one end of the positioning sleeve, and the positioning plate has

[0007] two positioning edges arranged opposite to each other. One of the positioning edges is engaged in one of the positioning recesses, and the other positioning edge is in contact with the supporting surface, wherein the positioning plate being arranged tilted with an axial direction of the positioning sleeve.

[0008] A plurality of stairs corresponding to the positioning recesses are preferably provided on the supporting surface and arranged in juxtaposition, one of the positioning edges is in contact with one of the stairs while the other positioning edge is engaged in corresponding positioning recess.

[0009] The supporting surface is preferably a curved surface.

[0010] The supporting surface is preferably a flat.

[0011] The inclination adjustment structure is preferably further included of a fixing bolt, a screw hole is defined on the main body, a through hole corresponding to the screw hole is defined on the positioning plate, the fixing bolt is inserted through the through hole and screwed into the screw hole, and the main body is thereby connected to the positioning plate.

[0012] A protruding stage toward the other end of the positioning sleeve is preferably formed on the positioning plate, a contacting surface is formed on the protruding stage, the contacting surface is of a curved shape, and the through hole is defined on the contacting surface.

[0013] The contacting surface is preferably concave into the protruding stage.

[0014] The protruding stage is preferably located between the two positioning edges.

[0015] The through hole is preferably located between the two positioning edges, and the screw hole is located between the positioning recesses and the supporting surface.

[0016] A contacting surface is formed on the positioning plate, the contacting surface is of a curved shape and the through is defined on the contacting surface.

[0017] The through hole is preferably of an elongated shape.

[0018] The through hole is preferably extended between the two positioning edges.

[0019] The positioning plate is preferably arranged tilted with an axial direction of the positioning sleeve.

[0020] An illuminating module is preferably provided in the main body.

[0021] The illuminating module is preferably included of a plurality of LEDs.

[0022] The positioning edge of the positioning sleeve is engaged the positioning recesses, and the main body is thereby fixed related to the positioning sleeve. Moreover, the inclination of the main body is able to be adjusted by engaging the positioning edge into various positioning recess. Therefore, the inclination adjustment structure of the present invention is firm and convenient

to be installed.

BRIEF DESCRIPTION OF DRAWING

[0023]

FIG. 1 is a schematic view showing an embodiment of the present invention;
FIG. 2 is an exploded diagram showing the embodiment of the present invention;
FIG. 3 is a schematic view showing an arrangement of the present invention;
FIG. 4 is a schematic view showing another arrangement of the present invention;
FIG. 5 is a schematic view showing the third arrangement of the present invention;
FIG. 6 is a schematic view showing another instance of the present invention; and
FIG. 7 is a schematic view showing the third instance of the embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENT

[0024] Please refer to FIGs. 1 and 2. An inclination adjustment structure of the road lamp including a main body 100, a positioning sleeve 200 and a fixing bolt 300 is provided in an embodiment of the present invention.

[0025] As shown in FIGs. 1 to 3. The main body 100 is a case made of metal, and at least an illuminating module 400 is provided on the main body 100. Two illuminating modules 400 are preferably provided on the main body 100 in the present embodiment. Each of the illuminating modules 400 is of a plate shape. The illuminating module 400 is included of a circuit board 410, and the LEDs 420 arranged on a side of the circuit board 410. The LEDs 420 on the illuminating module 400 are arranged toward the same direction.

[0026] Please refer to FIGs. 2 to 4. A plurality of positioning recesses 110 and a supporting surface 120 are formed on a lateral surface 101 of the main body 100, and the lateral surface 101 is preferably arranged at an included angle of 45-degree to the illuminating module 400, as shown in Fig. 1. Preferably, the positioning recesses 110 are continually arranged in juxtaposition and of a stair shape. The positioning recesses 110 and the supporting surface 120 are arranged on two opposite sides of the lateral surface 101, but it is not a limitation of the present invention. A screw hole 130 is defined on the lateral surface 101, and the screw hole 130 is preferably located between the positioning recesses 110 and the supporting surface 120. A plurality of stairs 121 corresponding to the positioning recesses 110 are arranged in juxtaposition on the supporting surface 120.

[0027] As shown in FIGs. 2 and 3, the positioning sleeve 200 is made of metal. The positioning sleeve 200 is sleeved on a pillar 500 and connected to the main body 100. Thereby, the main body 100 is fixed on the pillar 500. A beveled opening is formed at one end of the positioning sleeve 200, and a couple of positioning plates 210 are extended from the opening. The positioning plates 210 are symmetrical about an axial direction of the positioning sleeve 200. Therefore, only one positioning plate 210 will be described below. The positioning plate 210 is preferably at an included angle of 45-degree to an axial direction of the positioning sleeve 200. Each positioning plate 210 has a couple of positioning edges 211, 212 arranged opposite to each other. A protruding stage 213 is formed on each positioning plate 210 toward the other end of the positioning sleeve 200. The protruding stage 213 is located between two positioning edges 211, 212. A contacting surface 214 is concave into the protruding stage 213. The contacting surface 214 is of a curved shape, and a through hole 215 is opened on the contacting surface 214. The contacting surface 214 could be a convex curved surface formed on the protruding stage 213, but is not a limitation of the presentation.

[0028] Please refer to FIG. 3. The positioning sleeve 200 is sleeved on a vertically-arranged pillar 500, and the axial direction of the positioning sleeve 200 is arranged substantially perpendicular with the illuminating module 400. A positioning edge 211 of the positioning plate 210 is engaged into a positioning recess 110, and the other positioning edge 212 of the positioning plate 210 is engaged to a stair 121 corresponding to the positioning recess 110. In the present embodiment, the through hole 215 is of an elongated shape and extended between two positioning edges 211, 212. For example, the through hole 215 is a circular hole. The fixing bolt 300 is inserted through the through hole 215 and screwed into the screw hole 130. The main body 100 is thereby connected to the positioning plate 210 and fixed on the pillar 500. The illuminating module 400 is thereby substantially horizontal-arranged.

[0029] Please refer to FIGs. 3 and 4. The inclination of the illuminating module 400 is able to be adjusted by engaging the positioning edge 211 into various positioning recesses 110. The fixing bolt 300 is moved with the main body 100 while the main body 100 is arranged at various inclinations to the positioning sleeve 200. The fixing bolt 300 is arranged at various inclinations to the positioning plate 210 by moving the fixing bolt 300 along the through hole 215. The head 310 of the fixing bolt 300 is firmly in contact with the contacting surface 214 while the fixing bolt 300 is arranged in each inclination.

[0030] Please refer to FIG. 5. The positioning sleeve 200 is sleeved on a horizontally-arranged pillar 500. The axial direction of the positioning sleeve 200 is arranged substantially parallel with the illuminating module 400. A positioning edge 212 of the positioning plate 210 is engaged into a positioning recess 110, and the other positioning edge 211 of the positioning plate 210 is engaged to a stair 121 corresponding to the positioning recess 110. The fixing bolt 300 is inserted through the through hole 215 and screwed into the screw hole 130. The main body 100 is thereby connected to the positioning plate 210 and fixed on the pillar 500. The illuminating module

400 is thereby arranged substantially horizontal. Furthermore, the inclination of the illuminating module 400 is able to be adjusted by engaging the positioning edge 212 into various positioning recess 110.

[0031] Please refer to FIG. 6 and 7. The supporting surface 120 can be implemented without the stairs 121. While one of the positioning edges 211, 212 is engaged in one of the positioning recess 110, the other positioning edge 212, 211 is in contact with the supporting surface 120. The form of the supporting surface 120 is not limited in the present invention. For example, the surface 120 is optionally a flat shown in FIG. 6, and also optionally a curved surface shown in FIG. 7.

[0032] In the present invention, the positioning edges 211, 212 of the positioning sleeve 200 are able to be engaged into various positioning recesses 110 of the main body 100. Thereby, the relative position between the main body 100 and the positioning sleeve 200 is able to be adjusted. Therefore, compared with conventional technic, the inclination adjustment structure of the present invention can be installed more easily. The strength of the present invention is better than that of conventional technic as well.

Claims

1. An inclination adjustment structure of road lamp, comprising:

a main body (100), having a plurality of positioning recesses (110) arranged in juxtaposition and a supporting surface (120);
a positioning sleeve (200), forming a positioning plate (210) at one end thereof, the positioning plate (210) having two positioning edges (211/212) arranged opposite to each other, one of the positioning edges (211/212) being engaged in one of the positioning recess (110), and the other positioning edge (211/212) being in contact with the supporting surface (120),
characterized in that
the positioning plate (210) being arranged tilted with an axial direction of the positioning sleeve (200).

2. The inclination adjustment structure of lamp according to claim 1, wherein a plurality of stairs (121) corresponding to the positioning recesses (110) are provided on the supporting surface (120) and arranged in juxtaposition, one of the positioning edges (211/212) is engaged to one of the stairs (121) and the other positioning edge (212/211) is engaged in the corresponding positioning recess (110).

3. The inclination adjustment structure of lamp according to claim 1, wherein the supporting surface (120) is a curved surface.

4. The inclination adjustment structure of lamp according to claim 1, wherein the supporting surface (120) is a flat.

5. The inclination adjustment structure of lamp according to claim 1, further comprising a fixing bolt (300), wherein a screw hole (130) is defined on the main body (100), a through hole (215) corresponding to the screw hole (130) is defined on the positioning plate (210), the fixing bolt (300) is inserted through the through hole (215) and screwed into the screw hole (130), and the main body (100) is thereby connected to the positioning plate (210).

6. The inclination adjustment structure of lamp according to claim 5, wherein a protruding stage (213) toward the other end of the positioning sleeve (200) is formed on the positioning plate (210), a contacting surface (214) is formed on the protruding stage (213), the contacting surface (214) is of a curved shape, and the through hole (215) is defined on the contacting surface (214).

7. The inclination adjustment structure of lamp according to claim 6, wherein the contacting surface (214) is concave into the protruding stage (213).

8. The inclination adjustment structure of lamp according to claim 6, wherein the protruding stage (213) is located between the two positioning edges (211/212).

9. The inclination adjustment structure of lamp according to claim 5, wherein the through hole (215) is located between the two positioning edges (211/212), and the screw hole (130) is located between the positioning recesses (110) and the supporting surface (120).

10. The inclination adjustment structure of lamp according to claim 5, wherein a contacting surface (214) is formed on the positioning plate (210), the contacting surface (214) is of a curved shape, and the through (215) is defined on the contacting surface (214).

11. The inclination adjustment structure of lamp according to claim 5, wherein the through hole (215) is of an elongated shape.

12. The inclination adjustment structure of lamp according to claim 11, wherein the through hole (215) is extended between the two positioning edges (211/212).

13. The inclination adjustment structure of lamp according to claim 1, wherein an illuminating module (400) is provided in the main body (100).

14. The inclination adjustment structure of lamp according to claim 13, wherein the illuminating module (400) is comprised of a plurality of LEDs (420).

Patentansprüche

1. Neigungseinstellstruktur einer Straßenlampe, mit:

einem Hauptkörper (100) mit mehreren nebeneinander angeordneten Positionierungsausnehmungen (110) und einer Stützfläche (120);
einer Positionierungshülse (200), die an einem Ende eine Positionierungsplatte (210) bildet, wobei die Positionierungsplatte (210) zwei einander gegenüberliegend angeordnete Positionierungsränder (211/212) aufweist, wobei einer der Positionierungsränder (211/212) in eine der Positionierungsausnehmungen (110) eingreift und der andere Positionierungsrand (211/212) an der Stützfläche (120) anliegt,
dadurch gekennzeichnet, dass
die Positionierungsplatte (210) in axialer Richtung der Positionierungsplatte (200) geneigt ist.

2. Neigungseinstellstruktur einer Lampe nach Anspruch 1, bei welcher mehrere Stufen (121), welche den Positionierungsausnehmungen (110) entsprechen, auf der Stützfläche (120) vorgesehen sind und nebeneinander angeordnet sind, wobei einer der Positionierungsränder (211, 212) an einer der Stufen (121) angreift und der andere Positionierungsrand (212/211) in die entsprechende Positionierungsausnehmung (110) eingreift.

3. Neigungseinstellstruktur einer Lampe nach Anspruch 1, bei welcher die Stützfläche (120) eine gebogene Fläche ist.

4. Neigungseinstellstruktur einer Lampe nach Anspruch 1, bei welcher die Stützfläche (120) flach ist.

5. Neigungseinstellstruktur einer Lampe nach Anspruch 1, ferner mit einer Befestigungsschraube (300), wobei ein Schraubenloch (130) in dem Hauptkörper (100) ausgebildet ist, ein dem Schraubenloch (130) entsprechendes Durchgangsloch (215) in der Positionierungsplatte (210) ausgebildet ist, die Befestigungsschraube (300) durch das Durchgangsloch (215) eingeführt und in das Schraubenloch (130) geschraubt wird, und der Hauptkörper (100) auf diese Weise mit der Positionierungsplatte (210) verbunden wird.

6. Neigungseinstellstruktur einer Lampe nach Anspruch 5, bei welcher eine in Richtung des anderen Endes der Positiönierungshülse (200) vorstehende Stufe (213) an der Positionierungsplatte (210) ausgebildet ist, eine Anlagefläche (214) an der vorstehenden Stufe (213) ausgebildet ist, die Anlagefläche (214) eine gebogene Form aufweist, und das Durchgangsloch (215) in der Anlagefläche (214) ausgebildet ist.

7. Neigungseinstellstruktur einer Lampe nach Anspruch 6, bei welcher die Anlagefläche (214) in der vorstehenden Stufe (213) konkav ausgebildet ist.

8. Neigungseinstellstruktur einer Lampe nach Anspruch 6, bei welcher die vorstehende Stufe (213) zwischen den beiden Positionierungsrändern (211/212) angeordnet ist.

9. Neigungseinstellstruktur einer Lampe nach Anspruch 5, bei welcher das Durchgangsloch (215) zwischen den beiden Positionierungsrändern (211/212) angeordnet ist und das Schraubenloch (130) zwischen den Positionierungsausnehmungen (110) und der Stützfläche (120) angeordnet ist.

10. Neigungseinstellstruktur einer Lampe nach Anspruch 5, bei welcher eine Anlagefläche (214) an der Positionierungsplate (210) ausgebildet ist, wobei die Kontaktfläche (214) eine gebogene Form aufweist und das Durchgangsloch (215) in der Anlagefläche (214) ausgebildet ist.

11. Neigungseinstellstruktur einer Lampe nach Anspruch 5, bei welcher das Durchgangsloch (215) eine längliche Form aufweist.

12. Neigungseinstellstruktur einer Lampe nach Anspruch 11, bei welcher das Durchgangsloch (215) sich zwischen den beiden Positionierungsrändern (211/212) erstreckt.

13. Neigungseinstellstruktur einer Lampe nach Anspruch 1, bei welcher ein Beleuchtungsmodul (400) in dem Hauptkörper (100) vorgesehen ist.

14. Neigungseinstellstruktur einer Lampe nach Anspruch 13, bei welcher das Beleuchtungsmodul (400) aus mehreren LEDs (420) besteht.

Revendications

1. Structure de réglage de l'inclinaison d'une lampe de route, comprenant :

un corps principal (100), pourvu d'une pluralité d'évidements de positionnement (110) disposés en juxtaposition et une surface de support (120) ;
un manchon de positionnement (200), formant une plaque de positionnement (210) à une ex-

trémité de celui-ci, la plaque de positionnement (210) comportant deux bords de positionnement (211/212) disposés à l'opposé l'un de l'autre, l'un des bords de positionnement (211/212) étant engagé dans l'un des évidements de positionnement (110), et l'autre bord de positionnement (211/212) étant en contact avec la surface de support (120),

caractérisée en ce que

la plaque de positionnement (210) est disposée de façon inclinée par rapport à une direction axiale du manchon de positionnement (200).

2. Structure de réglage d'inclinaison de lampe selon la revendication 1, dans laquelle une pluralité de gradins (121) correspondant aux évidements de positionnement (110) sont prévus sur la surface de support (120) et disposées en juxtaposition, l'un des bords de positionnement (211/212) est engagé avec l'un des gradins (121) et l'autre bord de positionnement (212/211) est engagé dans l'évidement de positionnement (110) correspondant.

3. Structure de réglage d'inclinaison de lampe selon la revendication 1, dans laquelle la surface de support (120) est une surface incurvée.

4. Structure de réglage d'inclinaison de lampe selon la revendication 1, dans lequel la surface de support (120) est un méplat.

5. Structure de réglage d'inclinaison de lampe selon la revendication 1, comprenant en outre un boulon de fixation (300), un trou fileté (130) étant ménagé dans le corps principal (100), un trou traversant (215) correspondant au trou de vis (130) étant ménagé dans la plaque de positionnement (210), le boulon de fixation (300) étant inséré à travers le trou traversant (215) et vissé dans le trou fileté (130), et le corps principal (100) étant ainsi relié à la plaque de positionnement (210).

6. Structure de réglage d'inclinaison de lampe selon la revendication 5, dans laquelle un étage (213) saillant en direction de l'autre extrémité du manchon de positionnement (200) est formé sur la plaque de positionnement (210), une surface de contact (214) est formée sur l'étage saillant (213), la surface de contact (214) ayant une forme incurvée, et le trou traversant (215) étant ménagé dans la surface de contact (214).

7. Structure de réglage d'inclinaison de lampe selon la revendication 6, dans laquelle la surface de contact (214) est concave dans l'étage saillant (213).

8. Structure de réglage d'inclinaison de lampe selon la revendication 6, dans laquelle l'étage saillant (213) est situé entre les deux bords de positionnement (211/212).

9. Structure de réglage d'inclinaison de lampe selon la revendication 5, dans laquelle le trou traversant (215) est situé entre les deux bords de positionnement (211/212), et le trou fileté (130) est situé entre les évidements de positionnement (110) et la surface de support (120).

10. Structure de réglage d'inclinaison de lampe selon la revendication 5, dans laquelle une surface de contact (214) est formée sur la plaque de positionnement (210), la surface de contact (214) a une forme incurvée, et le trou traversant (215) est ménagé dans la surface de contact (214).

11. Structure de réglage d'inclinaison de lampe selon la revendication 5, dans laquelle le trou traversant (215) a une forme allongée.

12. Structure de réglage de lampe selon la revendication 11, dans laquelle le trou traversant (215) s'étend entre les deux bords de positionnement (211/212).

13. Structure de réglage d'inclinaison de lampe selon la revendication 1, dans laquelle un module d'éclairage (400) est prévu dans le corps principal (100).

14. Structure de réglage d'inclinaison de lampe selon la revendication 13, dans laquelle le module d'éclairage (400) comprend une pluralité de diodes électroluminescentes (420).

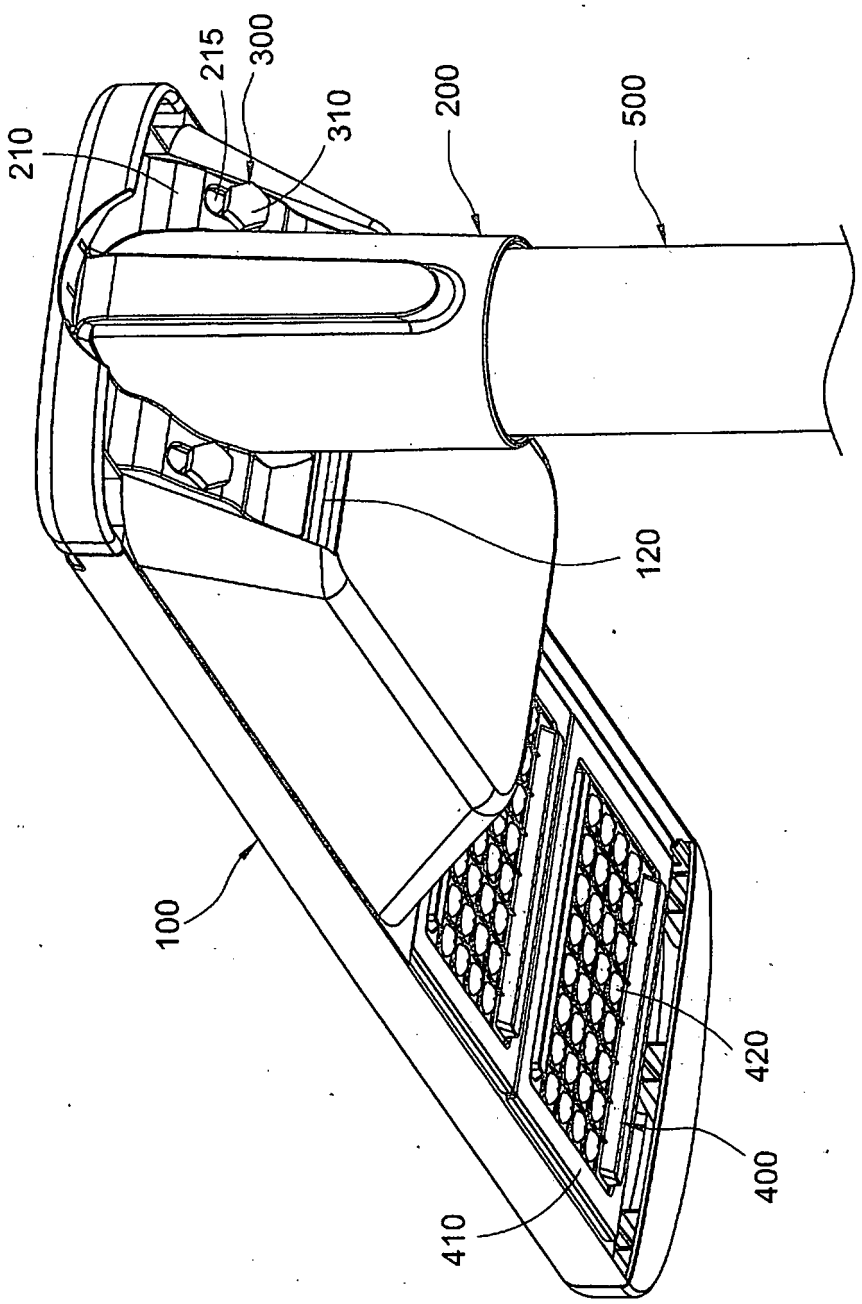


FIG.1

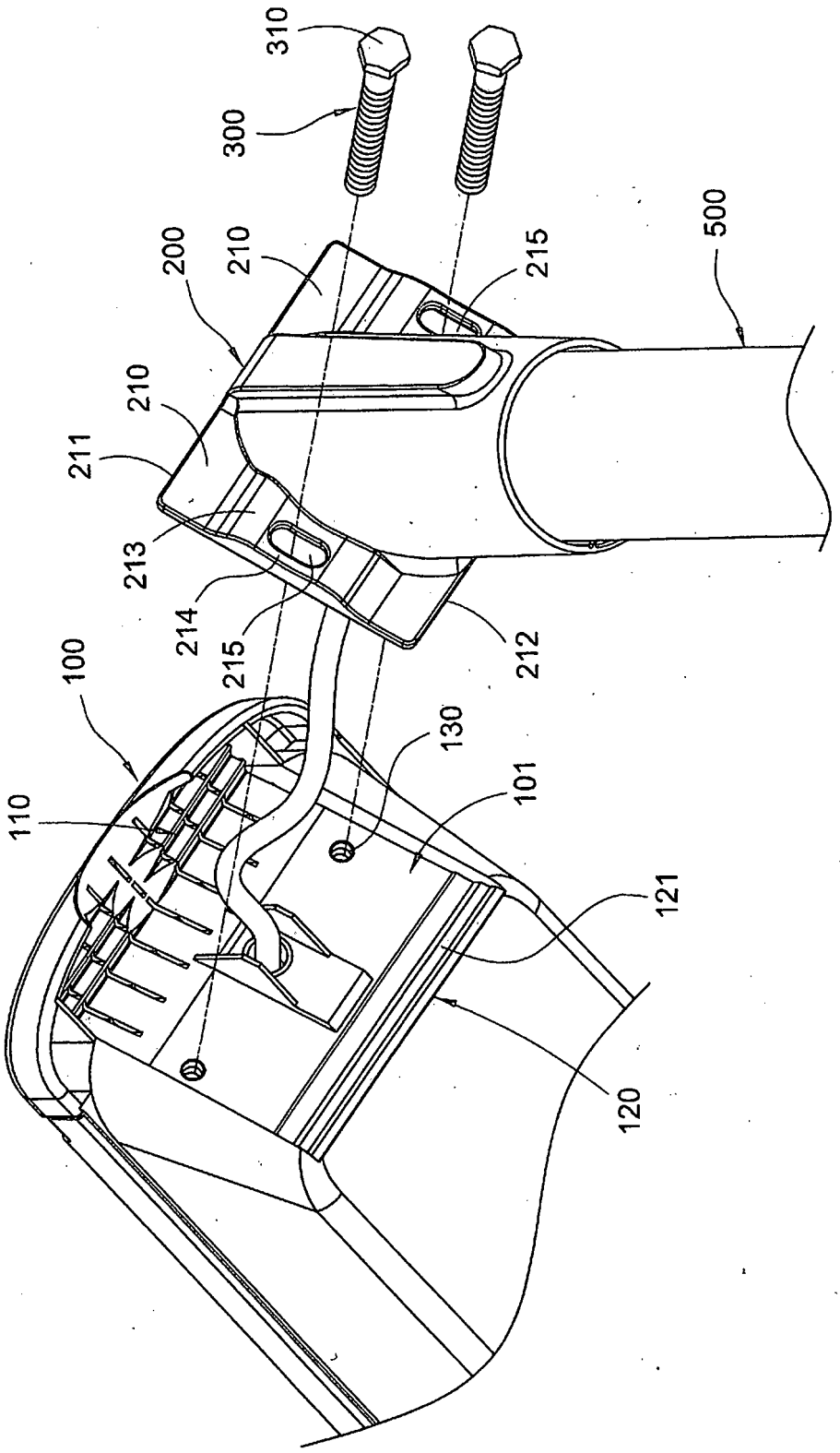

310
300
200
210
215
500
210
211
213
214
215
212
100
130
101
110
121
120

FIG.2

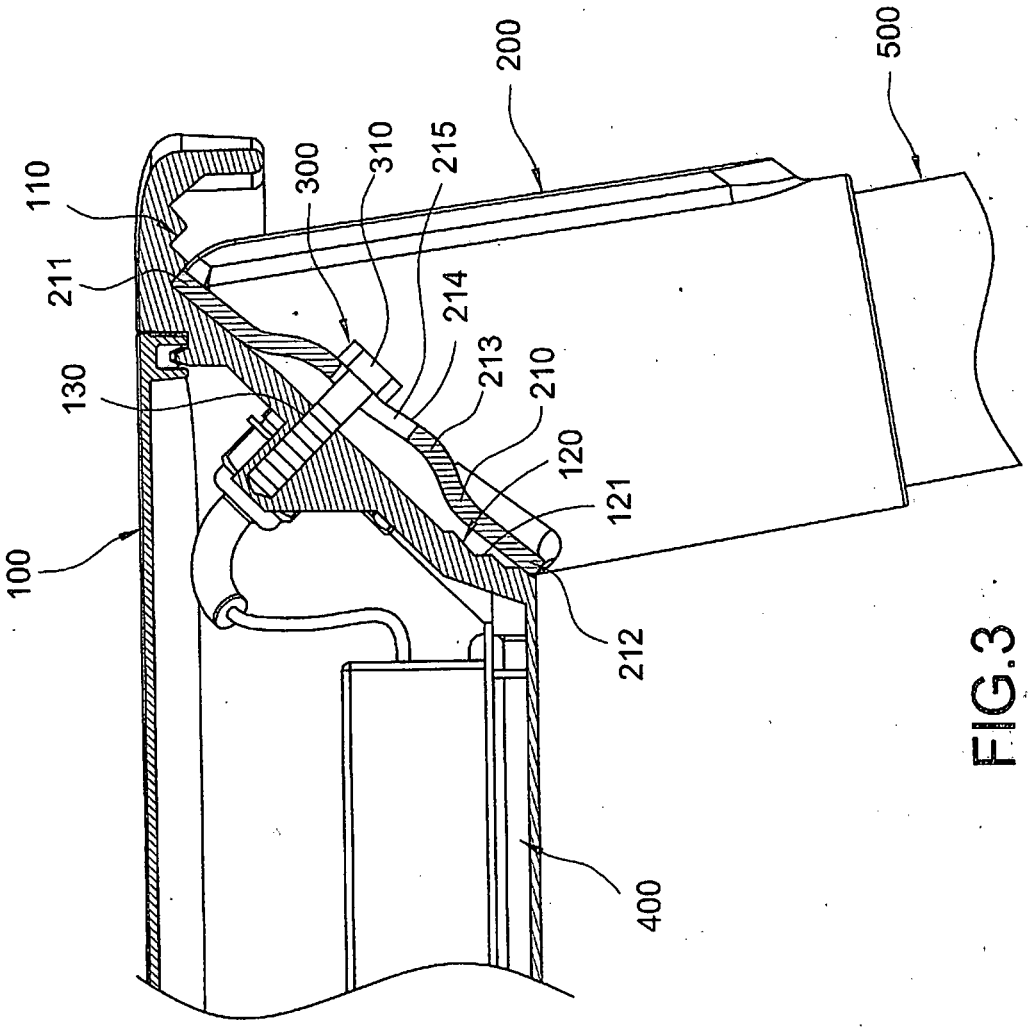


FIG.3

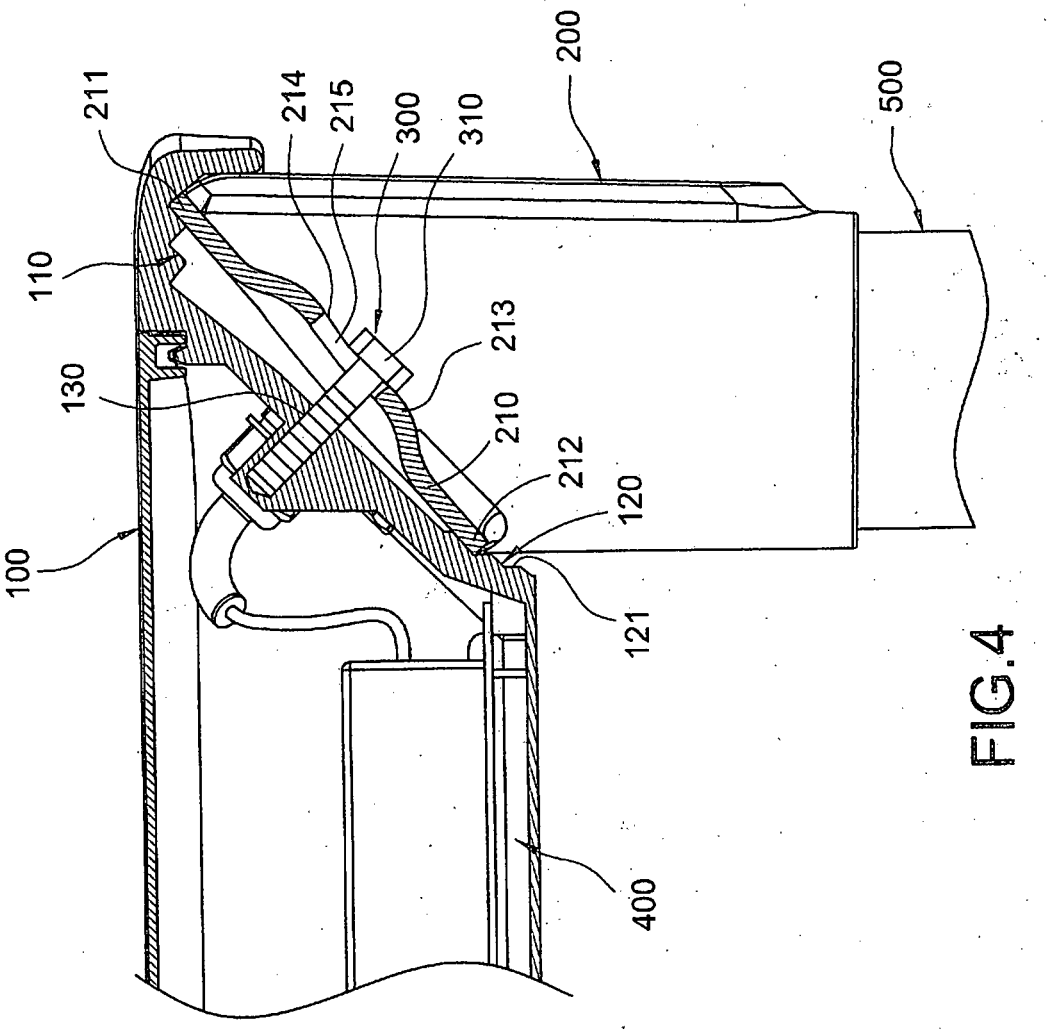


FIG.4

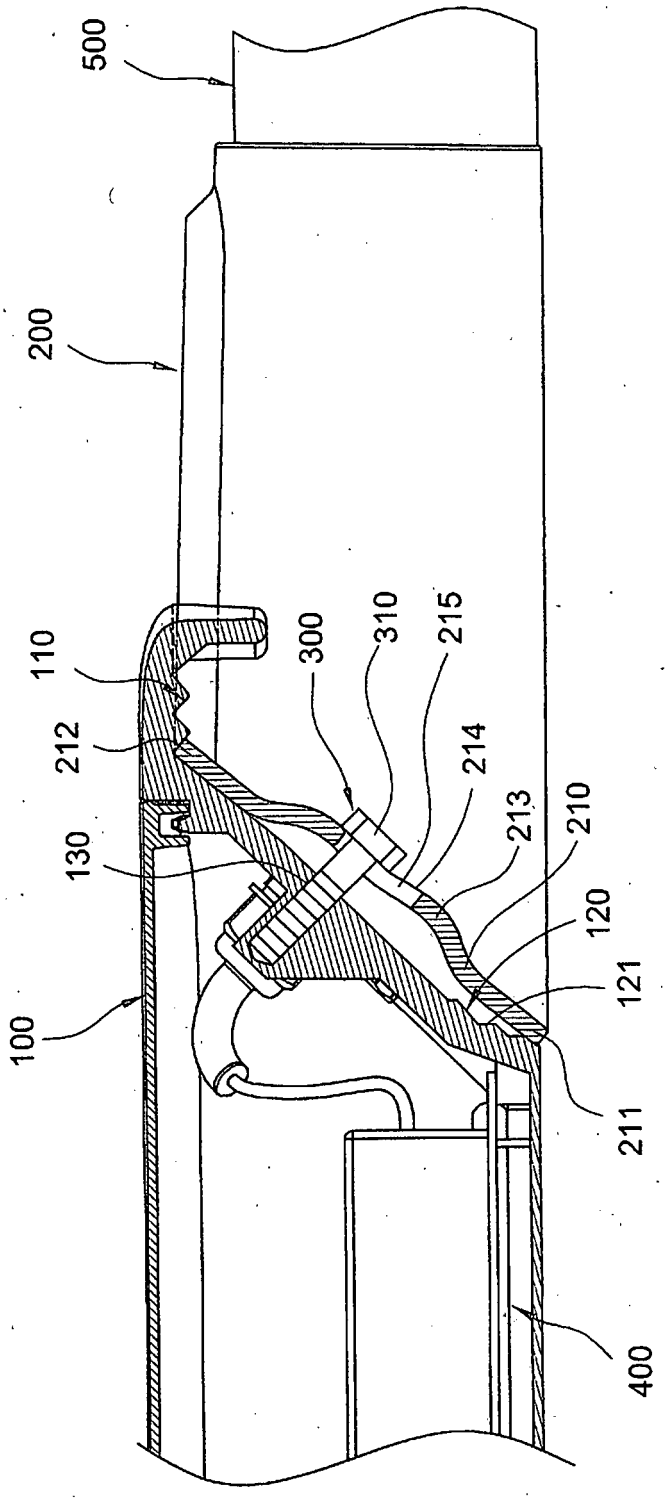


FIG.5

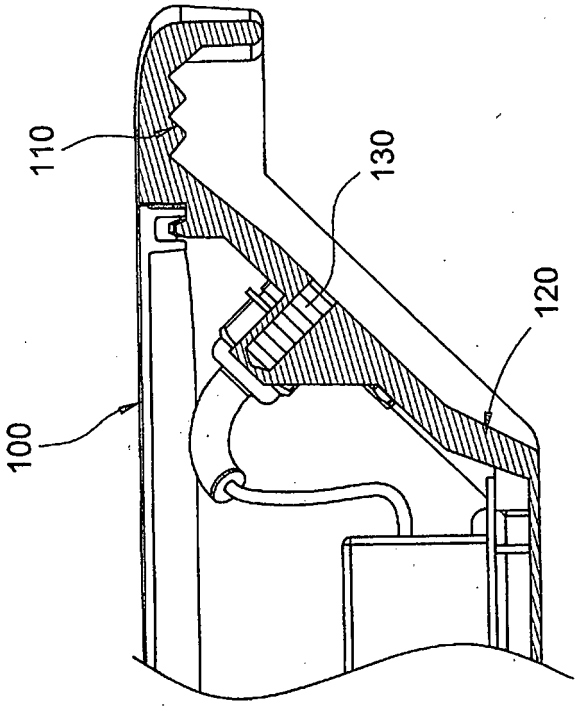


FIG.7

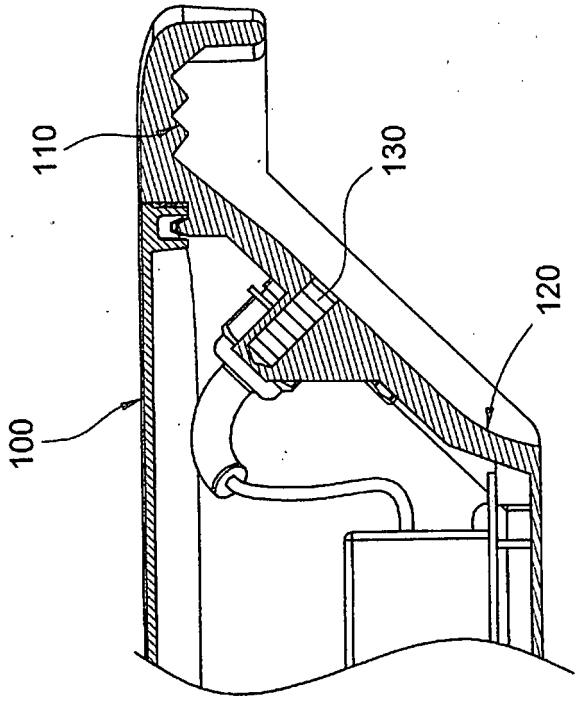


FIG.6

REFERENCES CITED IN THE DESCRIPTION

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- CN 201875579 U **[0003]**
- US 3387866 A **[0004]**