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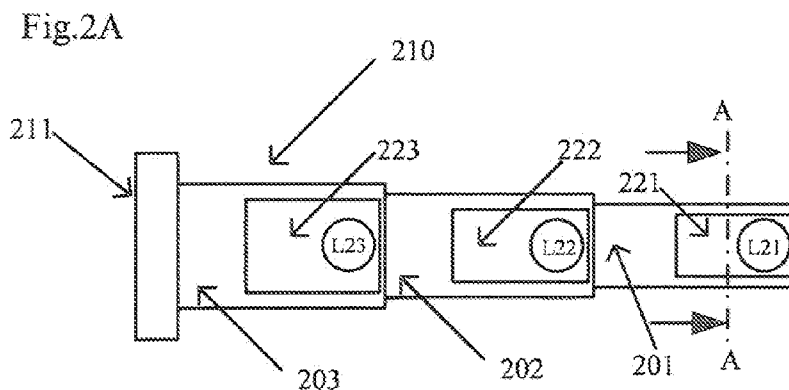
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(57) Abstract: The present invention discloses an installation adapter for an illumination device, which includes a support component and a base, wherein the support component includes a plurality of arms which are combined in a manner of being movable relative to each other to make the support component vary in length and/or shape and at least one of which is arranged with an installation portion for installing an illuminant. The invention further relates to an illumination device including the installation adapter.

INSTALLATION ADAPTER FOR ILLUMINATION DEVICE AND ILLUMINATION DEVICE

Field of the Invention

[0001] The present invention generally relates to an illumination device and in particular to an installation adaptor for an illumination device. The invention further relates to an illumination device including the installation adaptor.

Background of the Invention

[0002] An existing illumination device with an invariable length often can not be installed appropriately on a lamp with a specific size or various structures in which the illumination device is arranged. For example, a typical illumination device has a length of 300mm, so the length of the existing illumination device may be apparently insufficient if a user intends to install it on a lamp or various illumination environments with a length of 500mm in the length direction. Of course, another situation may arise that the illumination device has a too large size to match with those of the lamp or various illumination environments. A still another situation may arise that the lamp or various illumination environments tend to be geometrically irregular and the existing illumination device with a fixed shape and/or length can not be installed appropriately therein. Even if the existing illumination device is installed narrowly in the lamp or various illumination environments, it may be difficult to satisfy a required illumination condition, e.g., illumination intensity, etc., due to the limitation of the shape and/or length. Moreover, the shape and/or length of the illumination device installed narrowly in the lamp or various illumination environments fail to match with the lamp or various illumination environments, so this solution may not present an elegant appearance from the aesthetic perspective.

Summary of the Invention

[0003] In view of the foregoing problems, an embodiment of the invention provides an installation adapter for an illumination device, which includes a support component and a base, wherein the support component includes a plurality of arms which are combined in a manner of being movable relative to each other to make the support component vary in length and/or shape and at least one of which is arranged with an installation portion for installing an illuminant.

[0004] Moreover, an embodiment of the invention further proposes an illumination device including the installation adapter according to the embodiment of the invention and an illuminant installed in the installation adapter.

[0005] The installation adapter according to the embodiment of the invention can be adapted to various illumination environments and conditions (for example, it can match with various specifically designed lamps or illumination environments due to its adjustable shape and/or length) and can ensure a required illumination condition to be achieved (for example, it can ensure required illumination due to its adjustable shape and/or length) without selecting an illumination device in no length or shape cooperation to place the illumination device in a specific lamp or illumination environment. Moreover, an aesthetic effect can further be achieved by the installation adapter in match with the shape and/or length of a variously shaped lamp or various illumination environments. Additionally, the installation adapter makes the illumination device compact and convenient to carry to thereby save manufacturing and installation costs.

Brief Description of the Drawings

[0006] The present invention can be better understood by referring to the following descriptions in conjunction with the accompanying drawings. Throughout the drawings, the same or similar reference numerals indicate the same or similar components. The drawings together with the following detailed descriptions are included in the specification and form a part thereof. Meanwhile, they are used to further illustrate the preferred embodiments of the present invention and to explain the principle and advantages of the present invention. In the drawings:

[0007] Fig.1 illustrates a top view of the illumination device in the prior art;

[0008] Fig.2A schematically illustrates a top view of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention;

[0009] Fig.2B schematically illustrates a side view of the installation adapter including the illuminants in Fig.2A;

[0010] Fig.2C schematically illustrates a cross sectional view of an arm in the installation adapter including the illuminants along the sectional line A-A in Fig.2A;

[0011] Fig.3A schematically illustrates a perspective view of a part of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention;

[0012] Fig.3B illustrates a top view of a part of the installation adapter including the illuminants in Fig.3A;

[0013] Fig.3C illustrates a right view of an arm in the installation adapter including the illuminants in Fig.3A;

5 [0014] Fig.4A schematically illustrates a top view of a part of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention;

[0015] Fig.4B schematically illustrates a cross sectional view of an arm in the installation adapter including the illuminants along the sectional line B-B in Fig.4A;

10 [0016] Fig.5 schematically illustrates a perspective view of a part of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention;

[0017] Fig.6A schematically illustrates a side view of an installation adapter for an illumination device according to an embodiment of the invention;

15 [0018] Fig.6B schematically illustrates a right view of the installation adapter for an illumination device, which includes illuminants, shown in Fig.6A according to the embodiment of the invention in an expanded status;

[0019] Fig.7 schematically illustrates a perspective view of an installation adapter for an illumination device according to an embodiment of the invention;

[0020] Fig.8A schematically illustrates a top view of an installation portion on an arm in an installation adapter according to an embodiment of the invention;

20 [0021] Fig.8B schematically illustrates a process of installing an illuminant on the installation portion;

[0022] Fig.9A illustrates a top view of a part of an installation adapter for an illumination device according to an embodiment of the invention;

25 [0023] Fig.9B illustrates a right view of a part of an installation adapter for an illumination device according to an embodiment of the invention;

[0024] Fig.10A illustrates a top view of an installation portion of an arm in an installation adapter for an illumination device according to an embodiment of the invention; and

30 [0025] Fig.10B illustrates a cross sectional view of the installation portion of the arm in the installation adapter along the sectional line C-C in Fig.10A.

Detailed Description of the Invention

[0026] Hereinafter, the exemplary embodiments of the present invention will be

described with reference to the drawings. For the sake of clarity and concision, the specification does not describe all the features of the practical embodiments. However, it should be understood that in the process of developing any of such embodiments, many decisions particular to the embodiments must be made, so that the specific goals
5 of the developers can be achieved, and such decisions may vary with different embodiments.

[0027] It should also be noted herein that in order not to obscure the present invention by unnecessary details, only the structures of the devices that are closely related to the solution of the present invention are shown in the drawings, while other details that are
10 not so much related to the present invention are omitted.

[0028] Fig.1 illustrates a top view of the illumination device in the prior art. The illumination device with three illuminants will be illustratively described here as an example. As illustrated in Fig.1, the illumination device with three illuminants L1, L2 and L3 includes an installation adaptor, which includes a support 100 and a base 110.
15 The three illuminants L1, L2 and L3 schematically illustrated respectively with circles in Fig.1 are arranged side by side on the outer side of the support 100. Since neither the length nor the shape of the illumination device is adjustable, it can be installed only in a lamp with a specific length or in a differently shaped illumination environment for accommodating the illumination device.

[0029] Fig.2A schematically illustrates a top view of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention. The installation adaptor includes a support component 210 and a base component 211, where the support component 210 includes a plurality of arms 201, 202 and 203 which are combined in a manner of being movable relative to each other to
20 make the support component 210 vary in length and/or shape and at least one of which is provided with installation portions 221, 222 and 223 for installing the illuminants.

[0030] Fig.2B schematically illustrates a side view of the installation adapter including the illuminants in Fig.2A. Latches 241 and 242 can optionally further be arranged respectively on the outer sides of arms the 202 and 203 to position respectively the arm
30 201 relative to the arm 202 adjacent thereto and the arm 202 relative to the arm 202 adjacent thereto. Thus, the reliability of extending and retracting the support component 210 with a variable length or shape. Here the illuminants L21, L22 and L23 on the installation portions 221, 222 and 223 for installing the illuminants are further illustrated with dashed lines.

[0031] Fig.2C schematically illustrates a cross sectional view of the arm 201 in the installation adapter that includes the illuminants along the sectional line A-A in Fig.2A. As illustrated, the arm 201 has a circular cross section, and the installation portion 221 for installing the illuminants is a recess arranged on the outer side of the arm 201. As
5 illustrated, the illuminant L21 can be arranged in the installation portion 221 to be fully immersed in the arm 201, so that the arm 201 can fully retract in the arm 202. Of course, the illuminant L21 can alternatively be arranged to protrude from the circumferential surface of the cylinder, so that the arm 201 can still retract in the arm 202 till a predetermined depth.

10 [0032] In the embodiments schematically illustrated in Fig.2A to Fig.2C, the number of the arms constituting the support component is illustrative but will not be limited to three, that is, the number of the arms can be more or less as required in a practical application. The three arms 201, 202 and 203 are illustratively cylinders, but the invention will not be limited thereto but can adopt various shapes to be described later.
15 Moreover, the three arms 201, 202 and 203 are coupled together in a manner of being extendable and retractable relative to each other so that the support component 201 varies in length in the direction in which the arms extend and retract, which is also illustrative, and further descriptions will be presented of implementations of the support component varying in shape and/or varying in length in a specific direction in view of a
20 manner that the respective arms are constructed and coupled. Moreover, the arms can be detachably combined to facilitate a required increase or reduction of the number of the arms. Alternatively, the arms may not be detachable after they are installed to thereby improve the structural reliability of the support component.

[0033] Here, each of the arms 201, 202 and 203 can rotate in addition to being
25 longitudinally extendable and retractable to slide relative to each other, so that the illuminants L21, L22 and L23 arranged thereon can illuminate respectively toward different directions to thereby facilitate achieving different illumination scopes, angles, etc., as needed.

[0034] Alternatively, a channel 231 can further be centrally arranged in the axial
30 direction of the arm 201 as illustrated in Fig.2C. In this case, it is adapted to accommodate an electrical line running from the base to the illuminant (not illustrated here for clarity). The electrical line can be a line for powering the illuminant L21 or a control line for controlling the illuminant L21 to irradiate light. Although just the circular channel 231 is illustrated here, the shape of the channel 231 will not be limited
35 to a circle but can adopt any geometry as long as the electrical line can be accommodated. The arm 202 in combination with the arm 201 can be provided with a

fitting portion for fitting the arm 201 (not illustrated here). The fitting portion can be adapted to accommodate and guide also the electrical line running from the base to the arm 201 in addition to install and guide the arm 201 which can slide into or out of the fitting portion. Thereby, the channel separately arranged for the electrical line can be omitted. Similarly, the arm 203 can also be provided with a fitting portion for fitting the arm 200 (not illustrated here). The fitting portions can be shaped and configured arbitrarily to enable the respective arms adjacent thereto to slide into or out the fitting portions. For example, these fitting portions can alternatively be implemented with other mechanical structures, e.g., a slide rail, a guide slot, etc., to make the arms 201, 202 and 203 slide relative to each other. Although each of the arms 201, 202 and 203 can slide relative to the arm adjacent thereto in the example illustrated in Fig.2, it can be readily appreciated that the support component can vary in length as long as at least one of the arms 201, 202 and 203 is configured to be extendable and retractable relative to the arm adjacent thereto in another possible example.

[0035] In a specific example, the fitting portion can include the latches 241 and 242 which can position each of the arms 201, 202 and 203 relative to the arm adjacent thereto after the arm extends and retracts to a predetermined position. Of course, more latches can be arranged on one of the arms 201, 202 and 203 to differently position the arm relative to the arm adjacent thereto to thereby achieve various lengths. As can be apparent, the support component with a variable length can be implemented as long as one or more latches are arranged on at least one of the arms 201, 202 and 203 in another possible example. Alternatively, the latch can be omitted because the arms 201, 202 and 203 can fit in shape each other to enable damping slide relative to each other.

[0036] The three illuminants L21, L22 and L23 are illustrated respectively with circles in Fig.2A to Fig.2C simply for clarity and can be installed in the respective installation portions 221, 222 and 223 of the arms. The number of the illuminants can be any number as needed. Moreover, the three installation portions 221, 222 and 223 are schematically illustrated with rectangles for simplicity. Also the installation portions will not be limited to the shown shape and configuration but can adopt any shape capable of installing the illuminants. The three installation portions can also differ in shape and configuration from one to another.

[0037] Fig.3A schematically illustrates a perspective view of a part of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention. It differs from the embodiment of the installation adapter illustrated in Fig.2A primarily in that arms 301 and 302 of the support component has a substantially U-shaped cross section. Installation portions 321 and 322 for installing

illuminants L31 and L32 are arranged on the U-shaped tops of the U-shaped arms 301 and 302. The arms 301 and 302 can extend and retract relative to each other by means of guide rails 351 and 352 arranged respectively thereon, where the guide rails act as fitting portions of the arms.

5 [0038] Alternatively, the installation portions 321 and 322 for installing the illuminant L21 can be arranged on the bottoms of the U-shaped slots of the U-shaped arms 301 and 302 or the exterior or interior sides of the U-shaped legs of the U-shaped arms 301 and 302. The U-shaped top areas 361 and 362 of the U-shaped arms 301 and 302 are hollowed out to thereby reduce the amount of used materials and thus save a cost. Of
10 course, the U-shaped top areas 361 and 362 of the U-shaped arms 301 and 302 can alternatively be constructed without hollowed out, so as to enhance the structural strength.

[0039] Optionally, one or more latches 341 for locking the arm 301 can alike be arranged on the arm 302. Similarly, the latches can be omitted without any influence
15 upon implementing the function of the invention.

[0040] Fig.3B illustrates a top view of a part of the installation adapter including the illuminants illustrated in Fig.3A according to the embodiment of the invention. Fig.3C illustrates a right view of the arm 301 in the installation adapter including the illuminant in Fig.3A. An electrical line running from the base of the installation adapter to the
20 installation portion on the corresponding arm can be arranged on the bottom of the U-shaped slot of the arm 301, that is, a channel for accommodating the line here can be formed by means of the bottom of the U-shaped slot. As can be apparent, the channel for accommodating the line and the fitting portion for installing and guiding the arm which can slide into or out of the fitting portion can be constructed separately.

25 [0041] It shall further be noted that although only the two arms 301 and 302 are schematically illustrated here, the embodiment will not be limited to the only two arms but can include any number of arms. Moreover, any number of illuminants can be arranged on the installation portions of the respective arms without being limited to one illuminant being installed on the respective arms.

30 [0042] Fig.4A schematically illustrates a top view of a part of an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention. It differs from the embodiment of the installation adapter illustrated in Fig.2A primarily in that an arm 401 has a triangular cross section, that is, the arm is a triangular prism.

35 [0043] Fig.4B schematically illustrates a cross sectional view of the arm 401 in the

installation adapter along the sectional line B-B in Fig.4A. As illustrated, an installation portion 421 for installing an illuminant L41 is arranged in the corner area of the arm 401, and the illuminant L41 is fully embedded in the arm 401 after being installed in the installation portion 421, so that the arm 401 can fully retract into an arm 402. A channel 431 is adapted to accommodate an electrical line running from the base to the installation portion of the arm 401 (not illustrated here).

[0044] Alternatively, the installation portion 421 for installing the illuminant L41 can be arranged in a side of the arm 401 (not illustrated here), and the installation portion 421 can adopt any geometry capable of installing the illuminant L41. After being installed onto the installation portion 421, the illuminant L41 can alternatively protrude beyond the contour of the cross section of the arm 401 while still enabling the arm 401 to retract into the arm 402 to a predetermined depth.

[0045] It shall be noted that although just the circular channel 431 is illustrated here, the shape of the channel 431 will not be limited to a circle but can adopt any geometry. The arm 402 in combination with the arm 401 is provided with a fitting portion for making the arm 401 slide into or out of the fitting portion. The fitting portion can be shaped arbitrarily so that the arm 401 slides thereon. A channel for accommodating a line running from the base to the installation portion 421 or 422 on the corresponding arm 401 or 402 and the fitting portion for sliding of the arm can be constructed integrally or separately by those skilled in the art as required in practice, and repeated descriptions thereof will be omitted here.

[0046] The embodiment illustrated in Fig.4A and Fig.4B will not be limited to only the two arms but can include any number of arms. Moreover, any number of illuminants can be arranged on the installation portions of the respective arms without being limited to one illumination body being installed on the respective arms.

[0047] Further, those skilled in the art shall appreciate that the cross session of the arm of the installation adapter can alternatively be an ellipse, rectangle, polygon, non-full circle, irregular shape, etc., although this has not been illustrated here.

[0048] Fig.5 schematically illustrates a perspective view of an installation portion 522 on an arm 502 in an installation adapter for an illumination device, which includes illuminants, according to an embodiment of the invention. The installation portion 522 is arranged in the arm 502 separately from the arm 502 and in a manner of being rotatable relative to the arm 502. Thus, an illuminant L52 installed thereon can also vary in illuminate angle for a required illumination scope. Although just the arm 502 is illustrated here as an example, the implementation of the installation portion 522 can

equally be applicable to the arm 502 and/or a further arm (not illustrated here). It shall be further noted that the implementation of the installation portion can alternatively be combined with the arm which has a cross section of a triangle, ellipse, rectangle, square, polygon, non-full circle, irregular shape, etc., so that the arm and the corresponding installation portion can rotate relative to each other.

[0049] The installation portion 522 can be arranged coaxially with the substantially longitudinally extending line X of the arm 502 as illustrated in Fig.5. Alternatively, the installation portion 522 may not be arranged coaxially with the substantially longitudinally extending line X of the arm 502 as long as the arm 502 and the installation portion 522 can rotate relative to each other (not illustrated here).

[0050] In the installation adapters according to the embodiments of the invention described with reference to Fig.2 to Fig.5, the support component varying in length can be implemented based upon the constructions and configurations of the respective arms. Alternatively, the support component varying in shape can additionally or simultaneously be implemented based upon appropriate constructions and configurations of the respective arms, e.g., specific constructions and configurations included in the installation adapters according to embodiments of the invention to be described below with reference to Fig.6 and Fig.7. Specific details will be described below.

[0051] Fig.6A schematically illustrates a side view of an installation adapter for an illumination device according to an embodiment of the invention. The installation adapter includes a support component 610 consisted of four arms 601, 602, 603 and 604 and a base 611. Unlike the embodiment illustrated in Fig.2A to Fig.2C, the arms 601, 602, 603 and 604 in the present embodiment can rotate eccentrically around the axial line Y.

[0052] Fig.6B schematically illustrates a right view of the installation adapter for an illumination device, which includes illuminants, illustrated in Fig.6A according to the embodiment of the invention in an expanded status. As illustrated in the figure, the arms 601, 602, 603 and 604 extend fully and are arranged thereon respectively with installation portions 621, 622, 623 and 624 for installing illuminants L61, L62, L63 and L64. Therefore, it is achieved that the support component varying in shape can match to a differently shaped lamp or illumination environments.

[0053] Alternatively, at least one latch (not illustrated here) can further be arranged on the respective arms 601, 602, 603 and 604 to lock the respective extending arms in place. Of course, the present embodiment will not be limited to the shapes of the four

arms 601, 602, 603 and 604 and installation portions 621, 622, 623 and 624 as illustrated, and the number of the illuminants L61, L62, L63 and L64 as arranged above is merely illustrative but not limitative, and it is possible to increase or reduce the number of the arms, change the shape of the installation portions, adjust the number of the illuminants, etc., as needed in practice. In an example, the installation portions 621, 622, 623 and 624 can alternatively be arranged on the circumferential surfaces of the respective arms 601, 602, 603 and 604. The arms 601, 602, 603 and 604 can alternatively be constructed in a different shape.

[0054] Those skilled in the art can appreciate that in an alternative embodiment to the embodiment illustrated in Fig.6A and Fig.6B described above, at least one of the arms 601, 602, 603 and 604 can alternatively extend and retract relative to another arm, e.g., the arm adjacent thereto, so that the installation adapter according to the embodiment of the invention can also vary in length in the corresponding extending and retracting direction.

[0055] Moreover, the specific constructions and configurations of the respective components in the installation adapters according to the embodiments of the invention described above with reference Fig.2 to Fig.5 can also equally be applicable to the installation adapters according to the embodiment described with reference to Fig.6A and Fig.6B and the alternative embodiment thereof, and details thereof will not be repeated here.

[0056] Fig.7 schematically illustrates a perspective view of an installation adapter for an illumination device according to an embodiment of the invention. The installation adapter illustrated in the figure includes: a support component 710 consisted of at least one arm arbitrarily varying in shape, where only one arm 701 is schematically illustrated; and a base 711. At least one installation portion 721 is arranged on the outer side of the arm 701, and at least one illuminant is arranged on the installation portion, where only two illuminants L71 and L72 are schematically illustrated. The arm 701 can be made of a flexible material or include rigid segments with a fixed shape and flexible segments connecting the rigid segments to thereby readily implement the arm 701, so that the support component 710 varies in shape. The installation adapter has been merely schematically illustrated here, so the geometrical or positional relationships of the respective components are merely illustrative and shall not be construed to scale.

[0057] Although Fig.7 illustrates the support component 710 consisted of only one arm 701, the support 710 can alternatively include a plurality of arms, at least one of which can be constructed and configured as the arm 710 illustrated above in Fig.7. In an

example, the arms can shift relative to each other. Moreover, at least one of the arms can alternatively be made of a rigid material.

[0058] As can be apparent, in the embodiment illustrated in Fig.7 and the foregoing alternative embodiment thereof, the installation adapters according to the embodiment of the invention can be implemented, which vary in length in the extending and retracting direction of the respective arms, as long as the arms can move, e.g., extend and retract, rotate, etc., relative to each other. Additionally or alternatively, the installation adapter can vary arbitrarily in shape in the case that at least one of the arms is made of a flexible material or segment, and this depends upon the deformation feature of the flexible material or segment in use and can be set specifically by those skilled in the art as needed in practice. In the case that at least one of the arms is made of a rigid material, the installation adaptor varying in length and/or shape can still be implemented by appropriately arranging the fitting portions for coupling between the respective arms.

[0059] Moreover, the specific constructions and configurations of the respective components in the installation adapters according to the embodiments of the invention described above with reference Fig.2 to Fig.5 can also equally be applicable to the installation adapters according to the embodiment described with reference to Fig.7 and the alternative embodiment thereof, and details thereof will not be repeated here.

[0060] Fig.8A schematically illustrates a top view of an installation portion on an arm in an installation adapter for an illumination device according to an embodiment of the invention. In this embodiment, fixers for an illuminant that are arranged in a matrix on the installation portion are illustrated taking as an example the installation portion 221 on the arm 201 in the installation adapter in Fig.2A. A total number 9 of fixers 271 for an illuminant in three groups are arranged in a matrix in the installation portion 221. A user can selectively insert several illuminants as needed in practice. Fig.8B illustrates a process of installing an illuminant on the installation portion taking an illuminant 81 and a fixer 271 as an example. Here, the illuminant L81 is fixed on the installation portion 221 since pins of the illuminant L81 geometrically match to the fixer 271. Of course, it can be fixed in any of alternative fixing manners, which will not be enumerated here. Moreover, those skilled in the art can modify the number of the fixers and the arrangement thereof on the installation portion 201 as needed in a practical application in view of the disclosure of the invention. The implementation of the installation portion illustrated in Fig.8A and Fig. 8B can equally be applicable to an arm in any shape.

[0061] Fig.9A and Fig.9B illustrate top and right views of a part of an installation adapter for an illumination device according to an embodiment of the invention. Unlike

the extendable and retractable illumination device illustrated in Fig.2A, an arm 901 in a triangular prism and an arm 902 in a cylindrical shape can be combined to constitute a part of the installation adapter in this embodiment. On the outer side of the arm 901 in a triangular prism and the arm 902 in a cylindrical shape are further arranged installation portions 921 and 922, which respectively include fixers for an illuminant that are similarly arranged in a matrix as illustrated in Fig.8A . In order to enable movement, e.g., sliding, rotation, etc., of the combined arms in the two different shapes relative to each other, guide rails or guide slots 933 for sliding of the arms are arranged on corner areas of the arm 901 in a triangular prism and corresponding sites of fitting portions of the arm 902 in a cylindrical shape; or an annular guide rail or guide slot (not illustrated) is arranged for relative rotation of the arms 901 and 902. Alternatively, thread portions 933 can be constructed on the corner areas of the arm 901 in a triangular prism and the corresponding sites of the fitting portions of the arm 902 in a cylindrical shape. At least one latch can further be arranged on the arms in order to ensure the respective arms extending to a predetermined position to be locked in place.

[0062] Fig.9A and Fig.9B merely illustrates schematically the implementation of combining the arms in the two different shapes among the differently shaped arms described already. Such an implementation of combining the arms can implement the support component varying in shape and/or varying in length in a predetermined direction to thereby satisfy a demand of various illumination applications, and details thereof will not be repeated here.

[0063] Fig.10A illustrates a top view of an installation portion of an arm in an installation adapter for an illumination device according to an embodiment of the invention. In the figure, an embodiment of the installation portion is illustrated taking as an example of the installation portion 221 of the arm 201 in the installation adapter in Fig.2A. Here, the installation portion 221 is constructed as an annular slot on the arm, and the illuminants L101, L102 and L103 can be installed annularly. Fig.10B illustrates a cross sectional view of the installation portion on the arm 201 in the installation adapter along the sectional line C-C in Fig.10A. The implementation of the installation portion can equally be combined with various implementations of the invention.

[0064] In the respective embodiments of the installation adapter described above with reference to the drawings and embodiments of the installation adapter which have not been explicitly illustrated or described here, the base can further be provided with an accommodation cavity for accommodating a battery or a control circuit for controlling the installed illuminants. The control circuit is adapted to control an operation status, e.g., turning-on/off, adjustable illumination intensity, etc., of the respective illuminants

according to an actual condition. The control circuit performs the control according to a control signal, which can, for example, be a remote control signal from the outside or an internal control signal generated from an illumination signal sensed by a sensor arranged in the installation adapter. Thus, the installation adapter according to the
5 embodiments of the invention can function as a portal device to illuminate a space which is inconveniently accessible to thereby improve portability and convenience of usage.

[0065] Moreover, the base can be constructed as a grip portion to facilitate being held by a hand. The battery is preferably a chargeable or minimized battery. Alternatively, the
10 base can be provided with a bayonet or thread portion for fitting a typical bayonet or thread lamp holder, so that the illuminants can be powered by an external power source in the case that no power source is included in the installation adapter according to the embodiments of the invention or the chargeable battery in the base can be charged by an external power source in the case that a power source is included, so as to improve
15 convenience of using the installation adapter according to the embodiments of the invention. The fixers for fixing the illuminants mentioned above in the respective embodiments can be constructed as bayonet or thread lamp holders to facilitate cooperation with general illuminants for use.

[0066] It shall be noted that not all the arms are configured and constructed identically
20 in an alternative embodiment. As needed, for example, some of the arms may neither be provided with an installation portion nor be installed with an illuminant but may merely act as a support or installation member for another corresponding arm. Specific configurations and constructions of the respective components can be determined and arranged as needed in practice.

[0067] An illumination device can be formed after an illuminant is installed to an
25 installation portion of an installation adapter for an illumination device according to an embodiment of the invention. As compared with a general illumination device, the present illumination device can be applicable in a differently shaped lamp or an illumination environment with a different condition while ensuring an illumination
30 requirement, e.g., illumination intensity, scope, etc. In a specific example, the illuminant is preferably a light emitting diode or fluorescent lamp. As can be apparent, the illuminant can be a passive component powered through the installation adapter according to the embodiment of the invention or a self-illuminating active component.

[0068] It shall be noted that the components in the respective embodiments described
35 above with reference to the drawings and the constructions and configurations thereof

can be combined arbitrarily but will not be limited to those mentioned in the embodiments. Implementation of respective combinations can be selected and configured by those skilled in the art as needed in practice, and details thereof will not be repeated here.

- 5 [0069] Lastly, it shall be noted that terms “comprise”, “include”, “contain” or any other variants thereof are intended to encompass non-exclusive inclusion, so that a process, method, article or device that comprises a list of elements includes not only these elements but also other elements which have not been explicitly listed or inherent to such a process, method, article or device. Moreover, a sentence “comprising a/an ...”
10 which defines an element does not preclude presence of the same additional element(s) in the process, method, article or device that comprises the element unless otherwise stated.

- [0070] Although the embodiments of the invention have been detailed above with reference to the drawings, it shall be appreciated that the embodiments described above
15 are merely intended to illustrate but not limit the invention. Those skilled in the art can make various modifications and variations to the foregoing embodiments without departing from the spirit and scope of the invention. Accordingly, the scope of the invention is defined merely as the appended claims and their equivalences.

CLAIMS

1. An installation adapter for an illumination device, comprising a support component and a base, wherein the support component comprises a plurality of arms which are combined in a manner of being movable relative to each other to make the support component vary in length and/or shape and at least one of which is provided with an installation portion for installing an illuminant.

2. The installation adapter according to claim 1, wherein the arms are coupled together in a manner of being extendable and retractable relative to each other so that the support component varies in length in the direction in which the arms extend and retract

3. The installation adapter according to claim 1 or 2, wherein at least one of the arms is provided with a channel for accommodating an electrical line running from the base to the installation portion.

4. The installation adapter according to any one of claims 1 to 3, wherein at least one of the arms is provided with a fitting portion for matching of the at least one arm with at least one of the other arms adjacent thereto.

5. The installation adapter according to claim 4, wherein the fitting portion comprises at least one latch arranged on the at least one arm to position the at least one arm relative to the at least one of the other arms adjacent thereto

6. The installation adapter according to claim 4 or 5, wherein the channel is formed of the fitting portion in the arm provided with the fitting portion and the channel.

7. The installation adapter according to any one of claims 1 to 6, wherein at least one fixer for installing the illuminant is arranged on the installation portion of the at least one of the arms.

8. The installation adapter according to claim 7, wherein the fixers are arranged in a matrix.

9. The installation adapter according to any one of claims 1 to 8, wherein the installation portion is arranged in the at least one of the arms separately from the at least one arm and in a manner of being rotatable relative to the at least one arm.

10. The installation adapter according to any one of claims 1 to 9, wherein the cross section of the at least one of the arms is constructed as one of a rectangle, triangle, circle, non-full circle, U-shape, polygon, ellipse or irregular shape.

11. The installation adapter according to any one of claims 1 to 10, wherein at least one of the arms is made of a flexible or rigid material or comprises a plurality of rigid segments with a fixed shape and flexible segments connecting the rigid segments

5 12. The installation adapter according to any one of claims 4 to 11, wherein the fitting portion comprises a guide rail, guide slot or thread portion.

13. The installation adapter according to claim any one of claims 1 to 12, wherein the base is provided with an accommodation cavity for accommodating a battery or a control circuit of the illuminant.

10 14. The installation adapter according to any one of claims 1 to 13, wherein the base is constructed as a grip portion.

15. The installation adapter according to any one of claims 1 to 14, wherein the base comprises a lamp head for fitting a bayonet or thread lamp holder.

15 16. The installation adapter according to any one of claims 7 to 14, wherein the fixer is provided with a bayonet or thread portion for fitting a bayonet or thread lamp head in the illuminant.

17. An illumination device comprising the installation adapter according to any one of claims 1 to 16 and an illuminant installed in the installation adapter.

18. The installation adapter according to claim 17, wherein the illuminant is a light emitting diode or fluorescent lamp.

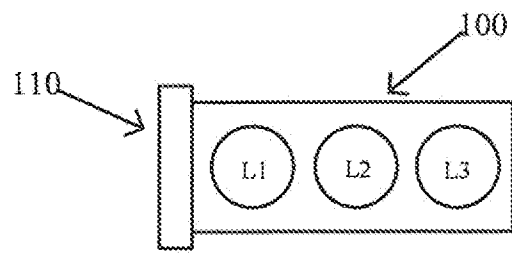


Fig.1

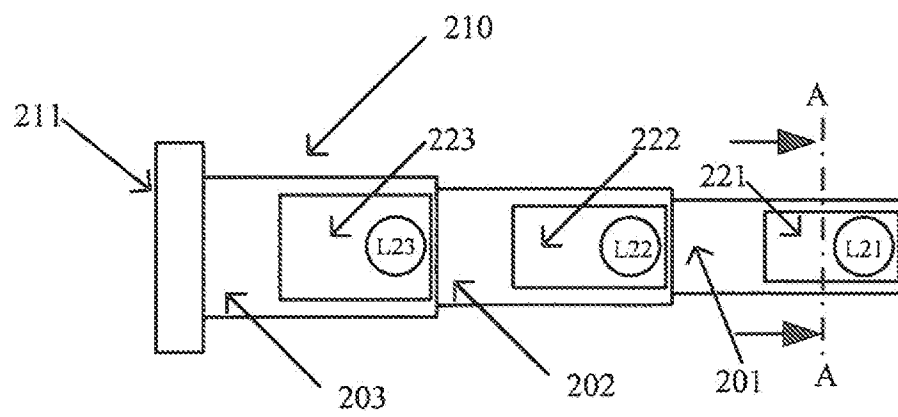


Fig.2A

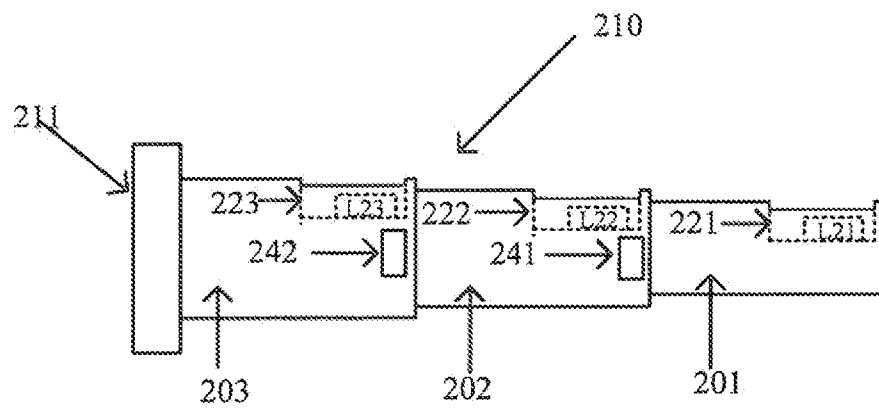


Fig. 2B

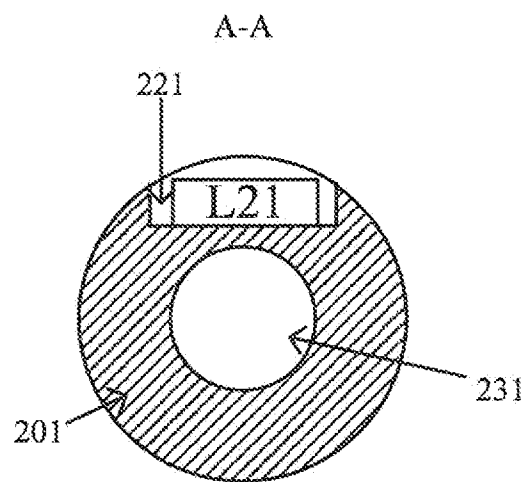


Fig. 2C

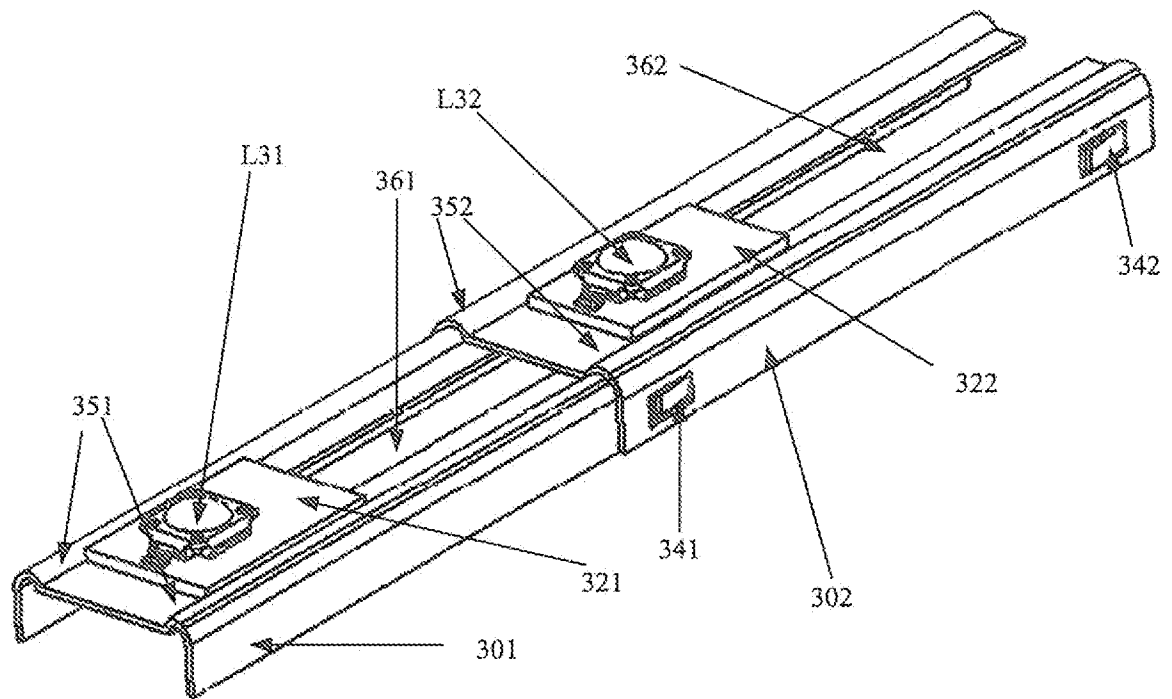


Fig.3A

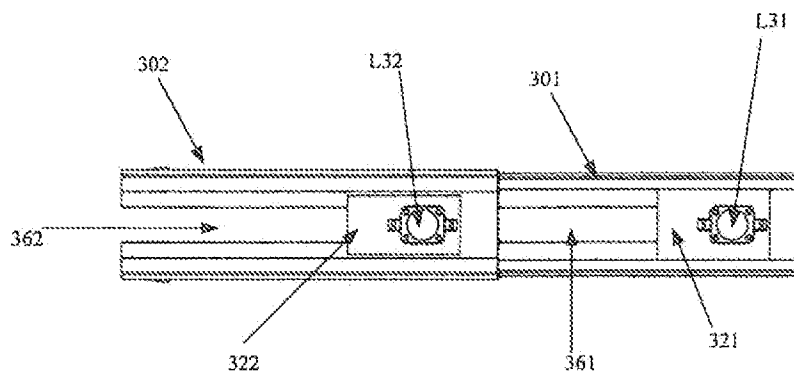


Fig.3B

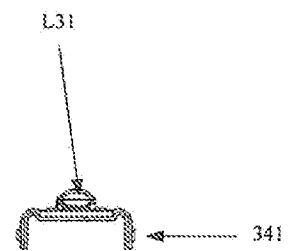


Fig.3C

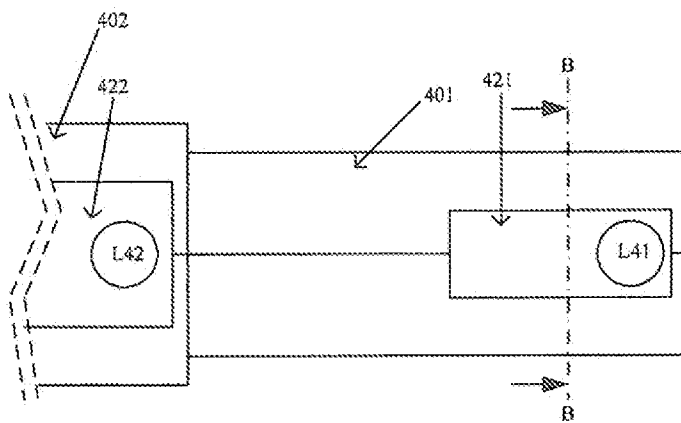


Fig.4A

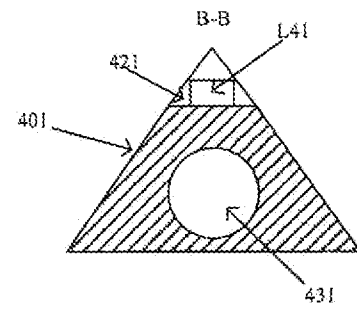


Fig.4B

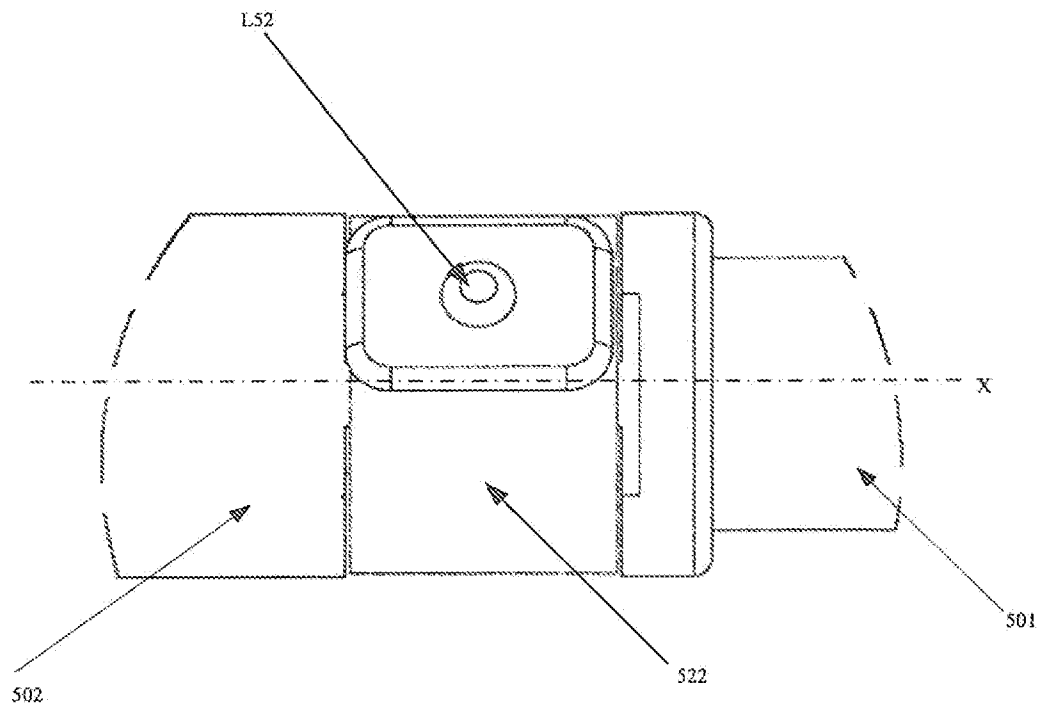


Fig.5

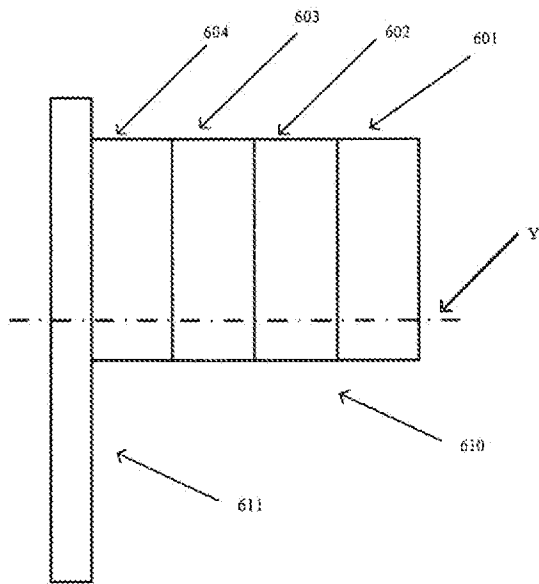


Fig. 6A

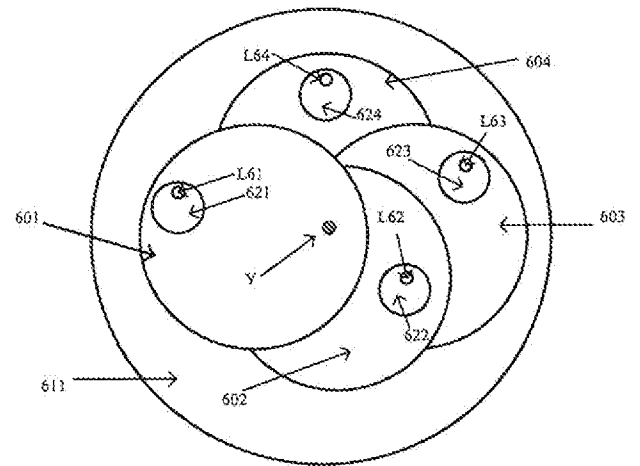


Fig. 6B

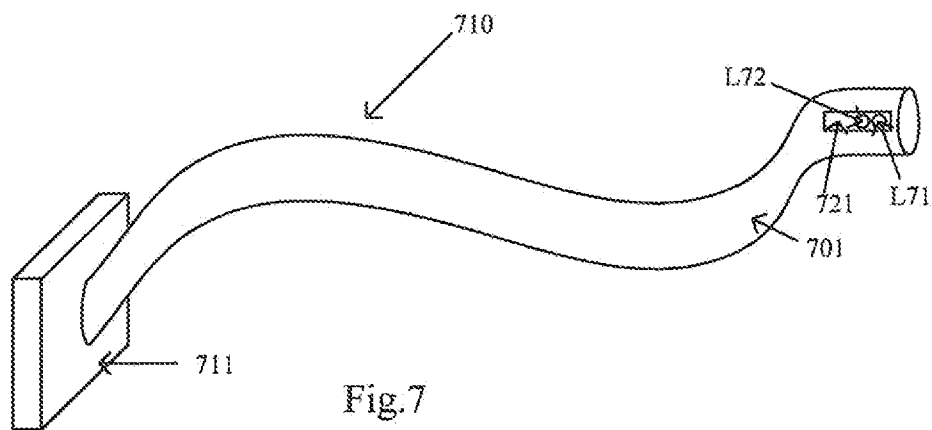


Fig. 7

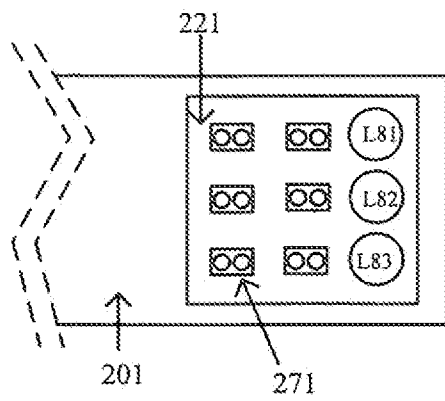


Fig. 8A

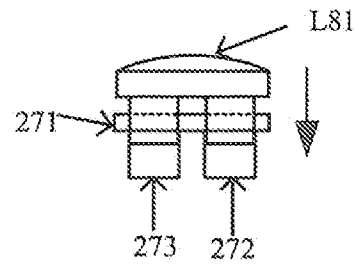


Fig. 8B

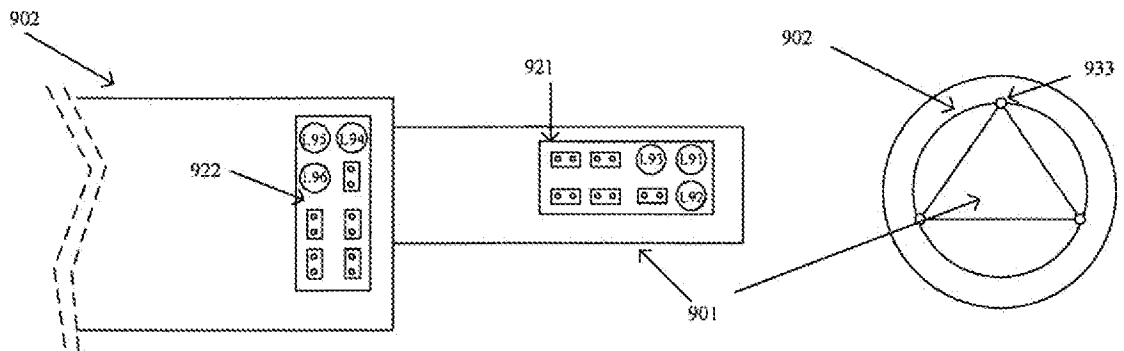


Fig. 9A

Fig. 9B

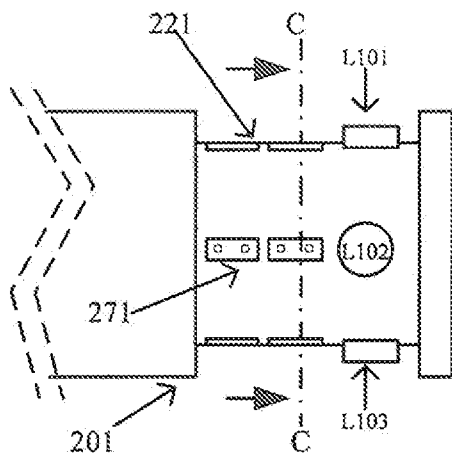


Fig.10A

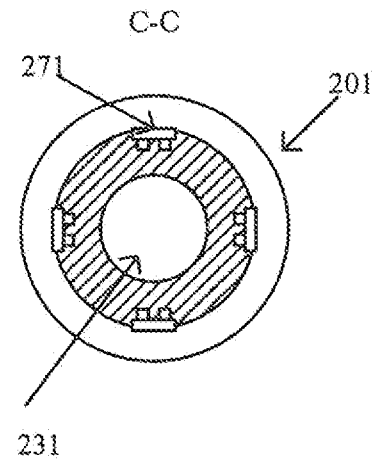


Fig.10B