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PROTECTIVE APPARATUS FOR BATTERY INSTALLATION.

(57)

The present disclosure relates to the battery protection, and in particular to a protective apparatus for battery installation, including an installing mechanism and a fixed mechanism, wherein the installing mechanism includes a moving rod, a first spring sleeved on a surface of the moving rod, a limiting block arranged at one end of the moving rod and a baffle slidingly connected with the moving rod, and one side of the moving rod is provided with an adaptive block; the fixed mechanism is arranged on one side of the installing mechanism and includes a base plate, both ends of the base plate are provided with moving members in respective, one side of the moving rod is provided with a drive member, the drive member includes a drive slot and further includes a second spring and a guide rod that are arranged at two ends thereof.

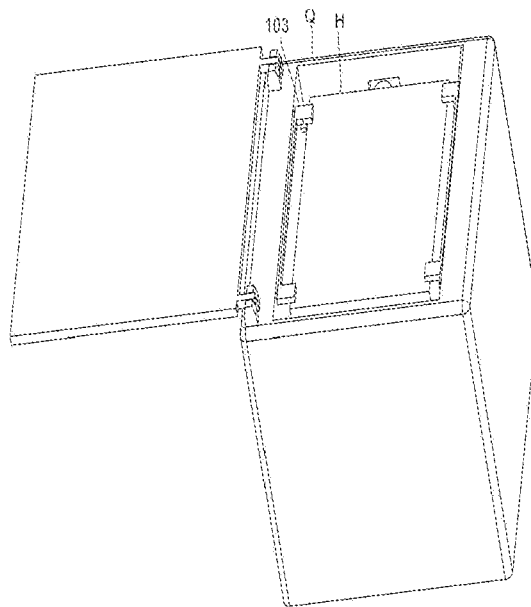


FIG. 1

PROTECTIVE APPARATUS FOR BATTERY INSTALLATION

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TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of battery protection, and in particular to a protective apparatus for battery installation.

BACKGROUND

[0002] As an apparatus that directly converts chemical energy into electric energy and a battery that is designed as rechargeable, a storage battery can achieve recharging through a reversible chemical reaction and usually refers to a lead-acid storage battery, and the lead-acid storage battery is one of batteries and belongs to a secondary battery; and however the existing battery is easy to collide with a base plate during installation and lacks a protective apparatus to protect the battery.

SUMMARY

[0003] The purpose of this part is to summarize some aspects of embodiments of the present disclosure and briefly introduce some preferred embodiments. Some simplifications or omissions may be made in this part as well as the abstract of description and invention title in this application, in order to avoid making the purpose of this part, the abstract of description and invention title be fuzzy, and these simplifications or omissions cannot be used for limiting the scope of the present disclosure.

[0004] In view of the issue existing in the foregoing existing technology, the present disclosure is proposed.

[0005] Therefore, the objective of the present disclosure is to provide a protective apparatus for battery installation, with the aim of providing a better protection to the battery.

[0006] To solve the foregoing technical issue, the present disclosure provides the following technical solution: a protective apparatus for battery installation, including an installing mechanism, where the installing mechanism includes a moving rod, a first spring sleeved on a surface of the moving rod, a limiting block arranged at one end of the moving rod and a baffle slidably connected with the moving rod, and one side of the moving rod is provided with an adaptive block; and

[0007] a fixed mechanism, where the fixed mechanism is arranged on one side of the installing mechanism and includes a base plate, and both ends of the base plate are provided with moving members in respective.

[0008] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, one side of the moving rod is provided with a drive member, the drive member includes a drive slot formed in one face thereof in a penetrating manner and further includes a second spring and a guide rod that are arranged at two ends thereof, and one side of the drive member is provided with a regulating block. LU506586

[0009] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, one side of the drive member is provided with a regulating member, the regulating member includes a bump arranged at one end thereof, and one end of the bump is connected with a square block of which one side is provided with teeth.

[0010] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, one side of the square block is provided with a drive shaft that is in meshing connection with the square block.

[0011] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, one side of the drive shaft is provided with a connecting block of which one side is provided with an extruding block, and the connecting block is slidingly connected with a sliding slot.

[0012] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, the base plate includes grooves formed in one side thereof, and adaptive balls are arranged inside the grooves.

[0013] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, bottoms of the adaptive balls are provided with push blocks that are arranged in moving slots.

[0014] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, the moving members are arranged on both sides of the base plate, support shafts are slidingly connected inside the moving members, and one side of each of the support shafts is provided with a rack.

[0015] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, a drive motor is arranged at a bottom of the base plate, and one side of the drive motor is provided with a worm.

[0016] As a preferred solution for the protective apparatus for the battery installation in the present disclosure, a drive gear is arranged at a bottom of the worm and in meshing connection with the rack.

[0017] The present disclosure has the following beneficial effects: the battery and the base plate can be clamped and fixed by setting the installing mechanism, the battery damage caused

by the collision of the battery and the base plate during installation can be effectively prevented by setting the base plate capable of moving, and when the battery moves to the bottom, the top of the battery can be limited. LU506586

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] To better clarify the technical solution in the embodiment of the present disclosure, the drawings required to illustrate the embodiment will be simply described below. It is apparent that the drawings described below merely illustrate some embodiments of the present disclosure. Those of ordinary skill in the art can obtain other drawings without contributing creative labor on the basis of those drawings. Where:

[0019] FIG. 1 is a schematic diagram of an overall structure provided by the present disclosure.

[0020] FIG. 2 is a schematic diagram of an internal structure provided by the present disclosure.

[0021] FIG. 3 is a fitting schematic diagram of a drive motor, a worm and a drive gear provided by the present disclosure.

[0022] FIG. 4 is a schematic diagram in another view of an internal structure provided by the present disclosure.

[0023] FIG. 5 is a schematic diagram of a fixed mechanism provided by the present disclosure.

[0024] FIG. 6 is an enlarged schematic diagram of a part G in FIG. 5 provided by the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0025] In order to make the above-mentioned purposes, features and advantages of the present disclosure more obvious and understandable, the specific implementation of the present disclosure will be clearly and completely described below in combination with the drawings of the description.

[0026] A lot of concrete details are described below so as to understand the present disclosure fully, however the present disclosure may be implemented by adopting other methods different from the method described herein, those skilled in the art may make similar promotions without violating the connotation of the present disclosure, and therefore the present disclosure is not limited by the specific embodiments disclosed below.

[0027] Then, “one embodiment” or “embodiments” herein refer to the specific characteristics,

structures or features included in at least one implementation of the present disclosure. “In one embodiment” occurring in different parts of the description does not refer to the same embodiment, or the embodiment separately or selectively rejecting with other embodiments.

[0028] And then, the present disclosure is described in detail in combination with the drawings. When describing the embodiments of the present disclosure in detail, for easy description, the profiles representing the device structure will be partially enlarged beyond the general proportion, and moreover, the schematic diagram is only an example, and the protection scope of the present disclosure shall not be limited herein. In addition, the three-dimensional space size of the length, width and depth shall be included in actual manufacturing.

[0029] Embodiment 1

[0030] Referring to FIGs. 1, 2 and 4-6, which is a first embodiment of the present disclosure, and this embodiment provides an installing mechanism 100.

[0031] Specifically, the installing mechanism 100 includes a moving rod 101, a first spring 102 sleeved on a surface of the moving rod 101, a limiting block 103 arranged at one end of the moving rod 101 and a baffle 104 slidably connected with the moving rod 101, and one side of the moving rod 101 is provided with an adaptive block 101a.

[0032] Preferably, the moving rod 101 is slidably connected with the baffle 104, the baffle 104 is provided with a through hole that is greater than an appearance of the moving rod 101, and since the moving rod 101 is fixedly connected with the limiting block 103, the limiting block 103 will extrude the first spring 102 and the baffle 104 is fixedly arranged, the other end of the first spring 102 is extruded on one side of the baffle 104.

[0033] Specifically, one side of the moving rod 101 is provided with a drive member 105, the drive member 105 includes a drive slot 105a formed in one face thereof in a penetrating manner and further includes a second spring 105b and a guide rod 105c that are arranged at two ends thereof, and one side of the drive member 105 is provided with a regulating block 105d.

[0034] Preferably, the setting of the drive slot 105a enables the drive slot 105a to fit with the adaptive block 101a mutually, the guide rod 105c can move in a box Q, the second spring 105b is sleeved in the guide rod 105c, one side of the drive member 105 is provided with a regulating block 105d that has a setting mode of fixing setting.

[0035] Specifically, one side of the drive member 105 is provided with a regulating member 106 that includes a bump 106a arranged at one end thereof, one end of the bump 106a is connected with a square block 106b of which one side is provided with teeth 106c while the

other side is provided with a drive shaft 107, the drive shaft 107 is in meshing connection with the square block 106b, one side of the drive shaft 107 is provided with a connecting block 108 of which one side is provided with an extruding block 109, and the connecting plate 108 is slidably connected with a sliding slot 108a.

[0036] Preferably, the bump 106a can just push the regulating block 105d when moving, the teeth 106c arranged on one side of the square block 106b drive the square block 106b to move through the drive shaft 107 such that the bump 106a moves, then the regulating block 105d can be pushed to move, the drive shaft 107 can drive the connecting block 108 to move such that the connecting block 108 slides in the sliding slot 108a and the extruding block 109 extrudes one side of the battery H, the movement of the square block 106b driven by the drive shaft 107 is started such that the bump 106a moves, then the regulating block 105d can be pushed to move, the drive shaft 107 can move by driving the connecting block 108 such that the connecting block 108 slides in the sliding slot 108a and the extruding block 109 extrudes one side of the battery H, to prevent the battery H from shifting when being taken out.

[0037] Embodiment 2

[0038] Referring to FIG. 1 to FIG. 6, which is a second embodiment of the present disclosure, this embodiment differs from the first embodiment in that: this embodiment provides a fixed mechanism 200.

[0039] Specifically, the fixed mechanism 200 is arranged on one side of the installing mechanism 100 and includes a base plate 201, and both ends of the base plate 201 are provided with moving members 202 in respective. The base plate 201 includes grooves 201a formed in one side thereof, and adaptive balls 201b are arranged inside the grooves 201a. Bottoms of the adaptive balls 201b are provided with push blocks 201c that are arranged in the moving slots 201d.

[0040] Further, the adaptive balls 201b can deform when being extruded, such that the push blocks 201c move in the moving slots 201d and the limiting block 103 may be extruded from the moving slots 201d, and four groups of grooves 201a, adaptive balls 201b, push blocks 201c and moving slots 201d are all provided.

[0041] Specifically, the moving members 202 are arranged on both sides of the base plate 201, support shafts 203 are slidably connected inside the moving members 202, one side of each of the support shafts 203 is provided with a rack 203a, a drive motor 204 is arranged at a bottom of the base plate 201, one side of the drive motor 204 is provided with a worm 205, a drive gear 206 is arranged at a bottom of the worm 205 and in meshing connection with the rack 203a.

[0042] Further, both sides of the base plate 201 are provided with the moving members 202, LU506586 that are sleeved on outer surfaces of the support shafts 203, one side of each of the support shaft 203 is provided the rack 203a that meshes with the drive gear 206 mutually, the operation of the drive motor 204 enables the worm 205 to start to rotate and to drive the drive gear 206 to rotate, when the battery S is completely placed, all the four adaptive balls 201b extrude the push blocks 201c such that the push blocks 201c move in the moving slots 201d, then the limiting block 103 may be extruded from the moving slots 201d to complete unlocking and ensure that the battery S is in a normal state, at this time the limiting block 103 still fits with the base plate 201, the drive motor 204 is started such that the worm 205 starts to rotate and drives the drive gear 206 to rotate, the base plate 201 declines stably through the mutual meshing of the drive gear 206 and the rack 203a and the setting of the moving members 202, and the limiting block 103 keeps the close fit with the outer surface of the battery S all the time; and when the decline of the base 201 is completed, the limiting block 103 just losses the limitation from the outer surface of the battery S, and the limiting block 103 fits with the upper surface of the battery S, to limit the battery S and effectively prevent the occurrence of a situation that the battery S shakes in the box H when the apparatus shakes.

[0043] The remaining structures are the same as the structure of Embodiment 1.

[0044] Embodiment 3

[0045] Referring to FIG. 1 to FIG. 6, which is a third embodiment of the present disclosure, this embodiment differs from the second embodiment in that: this embodiment provides a protective apparatus for battery installation.

[0046] Preferably, when using this apparatus, workers place the battery S on the base plate 201, after the battery S is completely placed, all the four adaptive balls 201b extrude the push blocks 201c such that the push blocks 201c move in the moving slots 201d, then the limiting block 103 may be extruded from the moving slots 201d to complete unlocking and ensure that the battery S is in a normal state, at this time the limiting block 103 still fits with the base plate 201, the drive motor 204 is started such that the worm 205 starts to rotate and drives the drive gear 206 to rotate, the base plate 201 declines stably through the mutual meshing of the drive gear 206 and the rack 203a and the setting of the moving members 202, and the limiting block 103 keeps the close fit with the outer surface of the battery S all the time; and when the decline of the base 201 is completed, the limiting block 103 just losses the limitation from the outer surface of the battery S, and the limiting block 103 fits with the upper surface of the battery S, to limit the battery S.

[0047] At this time, the movement of the square block 106b driven by the drive shaft 107 is

started such that the bump 106a moves, then the regulating block 105d can be pushed to move, the drive shaft 107 can move by driving the connecting block 108 such that the connecting block 108 slides in the sliding slot 108a and the extruding block 109 extrudes one side of the battery H, to prevent the battery H from shifting when being taken out; at this time, the drive motor 204 is started such that the worm 205 starts to rotate reversely and the base plate 201 rises stably, so the battery S may be taken out and then the drive shaft 107 rotates reversely, the extruding block 109 and the bump 106a recover the initial position, the drive member 105 moves horizontally under the action of the second spring 105b, such that the limiting block 103 stretches into the moving slots 210a, to complete the initial state and effectively prevent the occurrence of a situation that the battery S declines when not be placed well.

[0048] The drive gear 206 and the rack 203a are a skew gear and a skew rack in respective.

[0049] More importantly, it is noted that the configuration and layout of this application shown in a plurality of different exemplary implementation planes are merely exemplary. Although the contents disclosed herein only describe several implantation plans, those skilled referring to the contents of the disclosure shall easily understand that many modifications are possible (such as, the size, dimension, structure, shape and proportion, as well as parameter value (such as, temperature, pressure), installation layout, material use, color, directional change and the like of various components) under a premise of essentially not deviating from the novel teaching and advantage of the theme described in this application. For example, the shown components integrally formed may be composed of a plurality of parts or components, the position of the component may be reversed or changed in other manners, and the property, number or position of the discrete component may be modified or changed. Therefore, all these modifications are intended to be included within the scope of the present disclosure. The order or sequence of any process or method step may be changed or rearranged according to an alternative implementation plan. In claims, the clause of any “device pulse function” is intended to cover the structure executing the function and described herein, and it is not only structurally equivalent but functionally equivalent. Under a premise of not deviating from the scope of the present disclosure, other replacements, modifications, changes and omissions may be made in the design, running status and layout of the exemplary implementation plan. Therefore, the present disclosure is not limited to a specific implementation plan, and is expanded to a plurality of modifications still falling in the scope of the attached claims.

[0050] In addition, in order to provide the concise description for the exemplary implementation plan, all features (that is, those features are not related to the best mode considered at present and executing the present disclosure, or those features are not related to

the realization of the present disclosure) of the actual implementation plan may not be described. LU506586

[0051] Finally, it is to be noted that the above embodiments are merely used for illustrating the technical solution of the present disclosure instead of limiting it. Although the present disclosure is described in detail with reference to the preferred embodiments, those skilled in the art should understand that they can make modifications or equal replacements to the technical solution recorded in the present disclosure without deviating from the spirit and scope of the technical solution of the present disclosure, which should be covered in the scope of claims in the present disclosure.

CLAIMS

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WHAT IS CLAIMED IS:

1. A protective apparatus for battery installation, comprising
an installing mechanism (100), wherein the installing mechanism (100) comprises a moving rod (101), a first spring (102) sleeved on a surface of the moving rod (101), a limiting block (103) arranged at one end of the moving rod (101) and a baffle (104) slidingly connected with the moving rod (101), and one side of the moving rod (101) is provided with an adaptive block (101a); and
a fixed mechanism (200), wherein the fixed mechanism (200) is arranged on one side of the installing mechanism (100) and comprises a base plate (201), and both ends of the base plate (201) are provided with moving members (202) in respective.
2. The protective apparatus for the battery installation according to claim 1, wherein one side of the moving rod (101) is provided with a drive member (105), the drive member (105) comprises a drive slot (105a) formed in one face thereof in a penetrating manner and further comprises a second spring (105b) and a guide rod (105c) that are arranged at two ends thereof, and one side of the drive member (105) is provided with a regulating block (105d).
3. The protective apparatus for the battery installation according to claim 2, wherein one side of the drive member (105) is provided with a regulating member (106), the regulating member (106) comprises a bump (106a) arranged at one end thereof, and one end of the bump (106a) is connected with a square block (106b) of which one side is provided with teeth (106c).
4. The protective apparatus for the battery installation according to claim 3, wherein one side of the square block (106b) is provided with a drive shaft (107) that is in meshing connection with the square block (106b).
5. The protective apparatus for the battery installation according to claim 4, wherein one side of the drive shaft (107) is provided with a connecting block (108) of which one side is provided with an extruding block (109), and the connecting block (108) is slidingly connected with a sliding slot (108a).
6. The protective apparatus for the battery installation according to claim 4 or 5, wherein the base plate (201) comprises grooves (201a) formed in one side thereof, and adaptive balls

(201b) are arranged inside the grooves (201a).

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7. The protective apparatus for the battery installation according to claim 6, wherein bottoms of the adaptive balls (201b) are provided with push blocks (201c) that are arranged in moving slots (201d).

8. The protective apparatus for the battery installation according to claim 7, wherein the moving members (202) are arranged on both sides of the base plate (201), support shafts (203) are slidingly connected inside the moving members (202), and one side of each of the support shafts (203) is provided with a rack (203a).

9. The protective apparatus for the battery installation according to claim 8, wherein a drive motor (204) is arranged at a bottom of the base plate (201), and one side of the drive motor (204) is provided with a worm (205).

10. The protective apparatus for the battery installation according to claim 9, wherein a drive gear (206) is arranged at a bottom of the worm (205) and in meshing connection with the rack (203a).

Ansprüche

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1. Schutzvorrichtung für die Installation einer Batterie, dadurch gekennzeichnet, dass sie Folgendes umfasst:

einen Installationsmechanismus, umfassend eine bewegliche Stange (101), eine an der Oberfläche der beweglichen Stange (101) aufgesetzte erste Feder (102), einen an einem Ende der beweglichen Stange (101) angeordneten Begrenzungsblock (103) und eine mit der beweglichen Stange (101) verschiebbar verbundene Ablenkplatte (104), wobei auf einer Seite der beweglichen Stange (101) ein Anpassungsblock (101a) angeordnet ist; und

einen Befestigungsmechanismus (200), der auf einer Seite des Installationsmechanismus (100) angeordnet ist, wobei der Befestigungsmechanismus (200) eine Bodenplatte (201) umfasst, und wobei zwei Enden der Bodenplatte (201) jeweils mit einem beweglichen Element (202) versehen sind.

2. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 1, dadurch gekennzeichnet, dass auf einer Seite der beweglichen Stange (101) ein Antriebselement (105) angeordnet ist, das eine Antriebsnut (105a) umfasst, die durchdringend auf einer Seite des Antriebselements vorgesehen ist, wobei das Antriebselement (105) weiterhin eine zweite Feder (105b) und eine Führungsstange (105c) umfasst, die an zwei Enden des Antriebselements angeordnet sind, und wobei auf einer Seite des Antriebselements (105) ein Einstellblock (105d) angeordnet ist.

3. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 2, dadurch gekennzeichnet, dass auf einer Seite des Antriebselements (105) ein Einstellelement (106) angeordnet ist, das einen an einem Ende davon angeordneten hervorstehenden Block (106a) umfasst, wobei mit einem Ende des hervorstehenden Blocks (106a) ein quadratischer Block (106b) verbunden ist, und wobei auf einer Seite des quadratischen Blocks (106b) ein Zahn (106c) angeordnet ist.

4. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 3, dadurch gekennzeichnet, dass auf einer Seite des quadratischen Blocks (106b) eine Antriebswelle (107) angeordnet ist, die kämmend mit dem quadratischen Block (106b) verbunden ist.

5. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 4, dadurch gekennzeichnet, dass auf einer Seite der Antriebswelle (107) ein Verbindungsblock (108) angeordnet ist, wobei auf einer Seite des Verbindungsblocks (108) ein Extrusionsblock (109)

angeordnet ist, und wobei der Verbindungsblock (108) mit einer Gleitnut (108a) verschiebbar verbunden ist. LU506586

6. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 4 oder 5, dadurch gekennzeichnet, dass die Bodenplatte (201) eine auf einer Seite davon angeordnete Aussparung (201a) umfasst, wobei im Inneren der Aussparung (201a) eine Anpassungskugel (201b) angeordnet ist.

7. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 6, dadurch gekennzeichnet, dass an dem Boden der Anpassungskugel (201b) ein Schubblock (201c) angeordnet ist, der in einem beweglichen Schlitz (201d) angeordnet ist.

8. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 7, dadurch gekennzeichnet, dass auf zwei Seiten der Bodenplatte (201) ein bewegliches Element (202) angeordnet ist, wobei mit dem Inneren des beweglichen Elements (202) eine Stützwelle (203) verschiebbar verbunden ist, und wobei auf einer Seite der Stützwelle (203) eine Zahnstange (203a) angeordnet ist.

9. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 8, dadurch gekennzeichnet, dass an dem Boden der Bodenplatte (201) ein Antriebsmotor (204) angeordnet ist, wobei auf einer Seite des Antriebsmotors (204) eine Schnecke (205) angeordnet ist.

10. Schutzvorrichtung für die Installation einer Batterie nach Anspruch 9, dadurch gekennzeichnet, dass an dem Boden der Schnecke (205) ein Antriebszahnrad (206) angeordnet ist, das kämmend mit der Zahnstange (203a) verbunden ist.

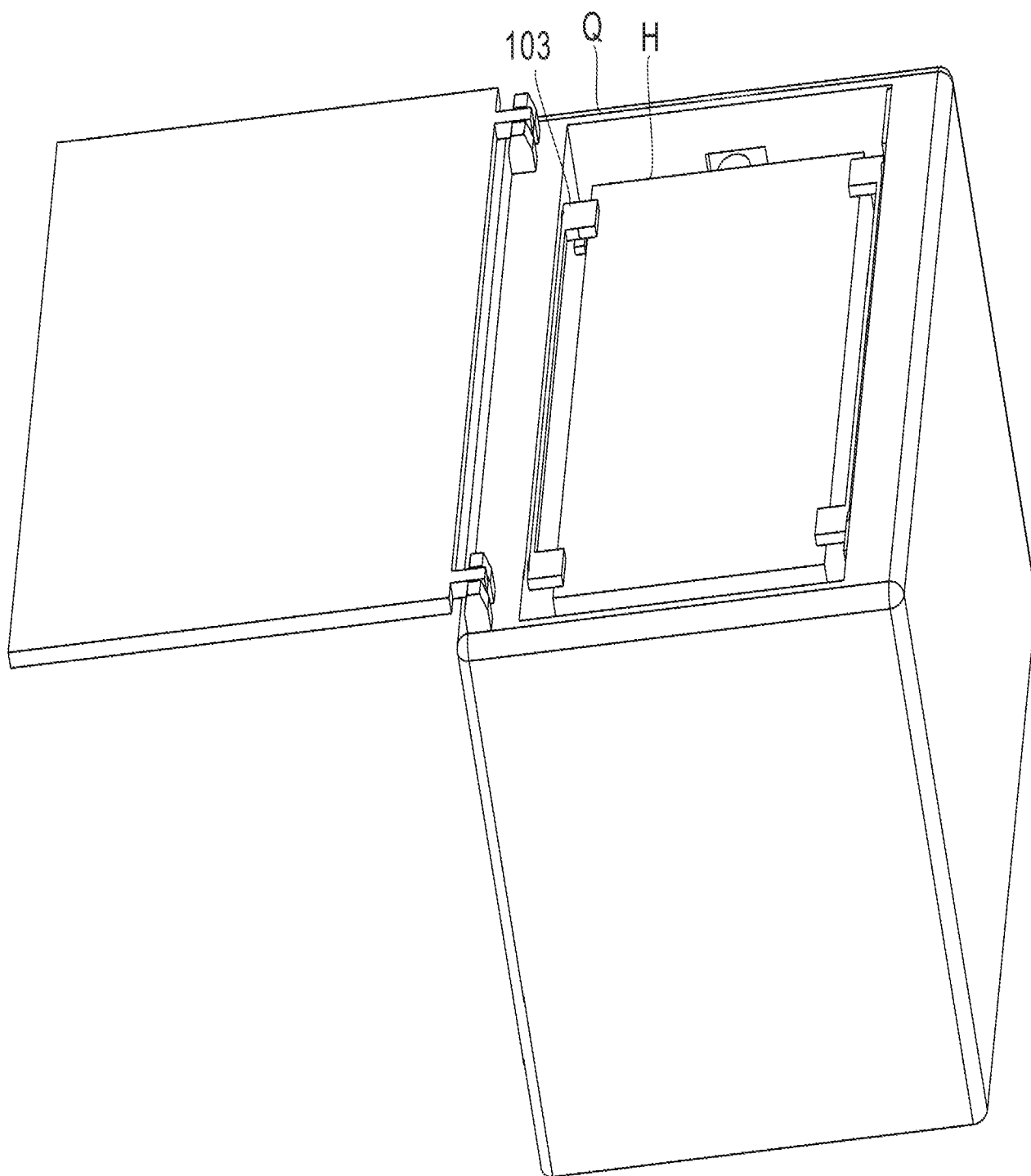


FIG. 1

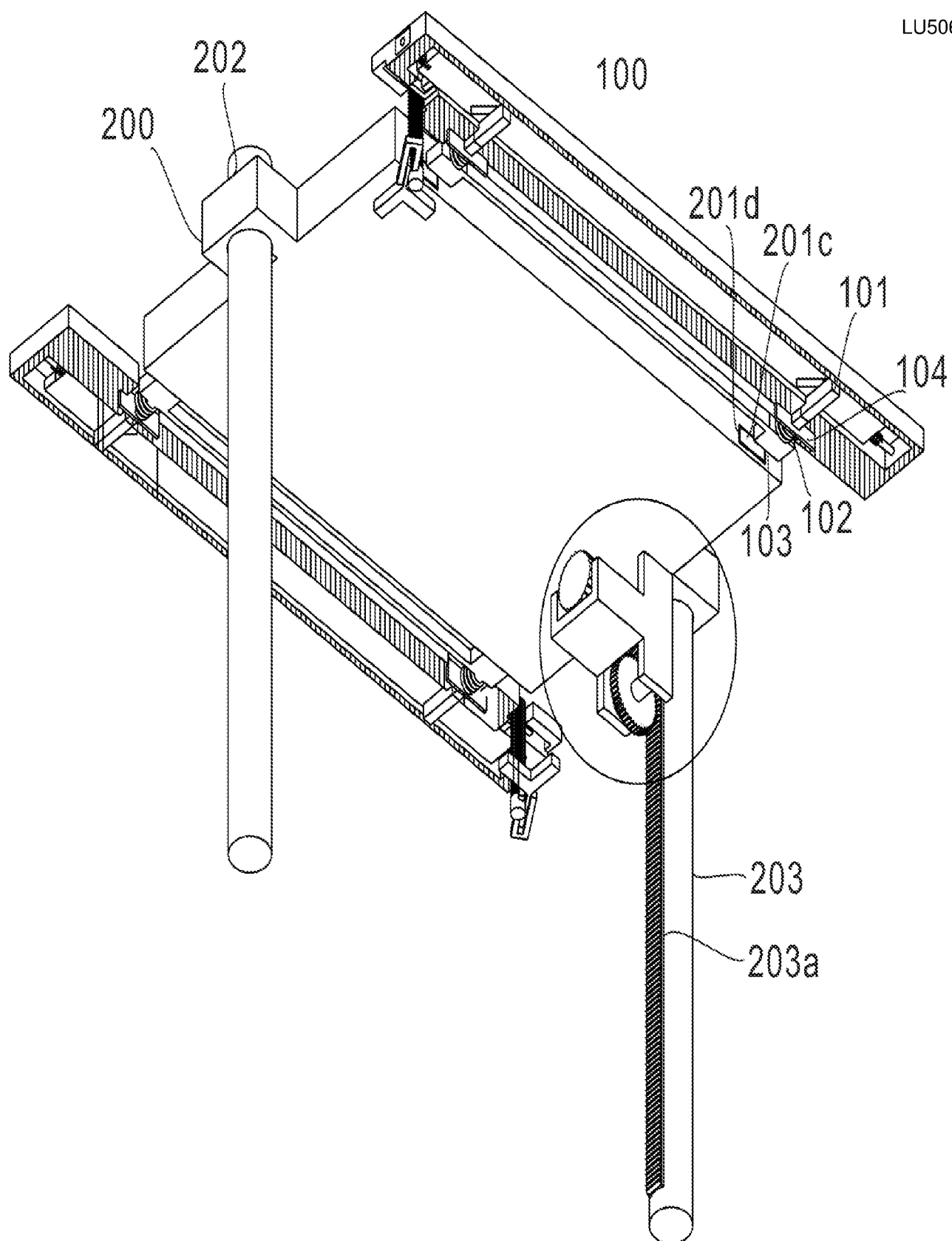


FIG. 2

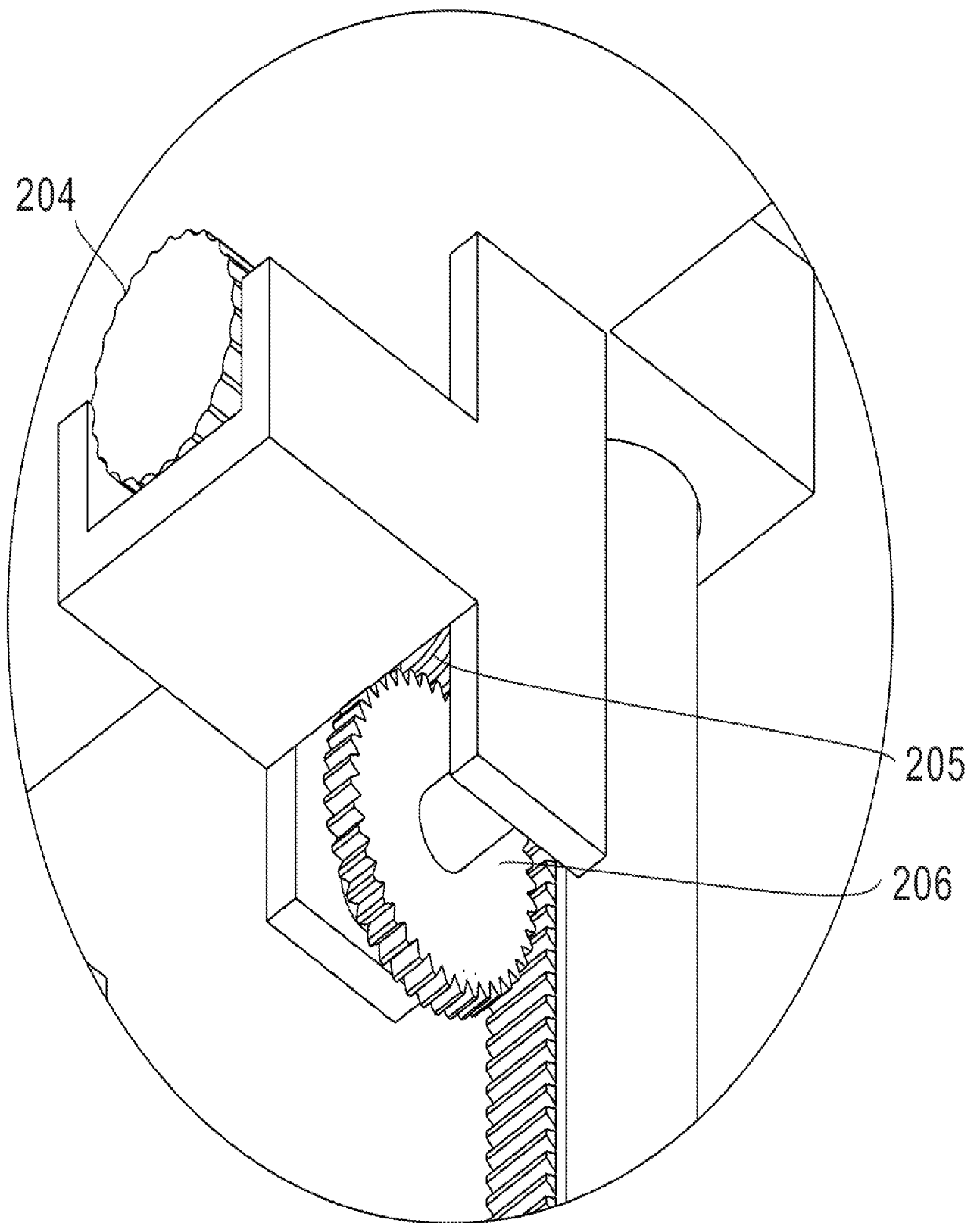


FIG. 3

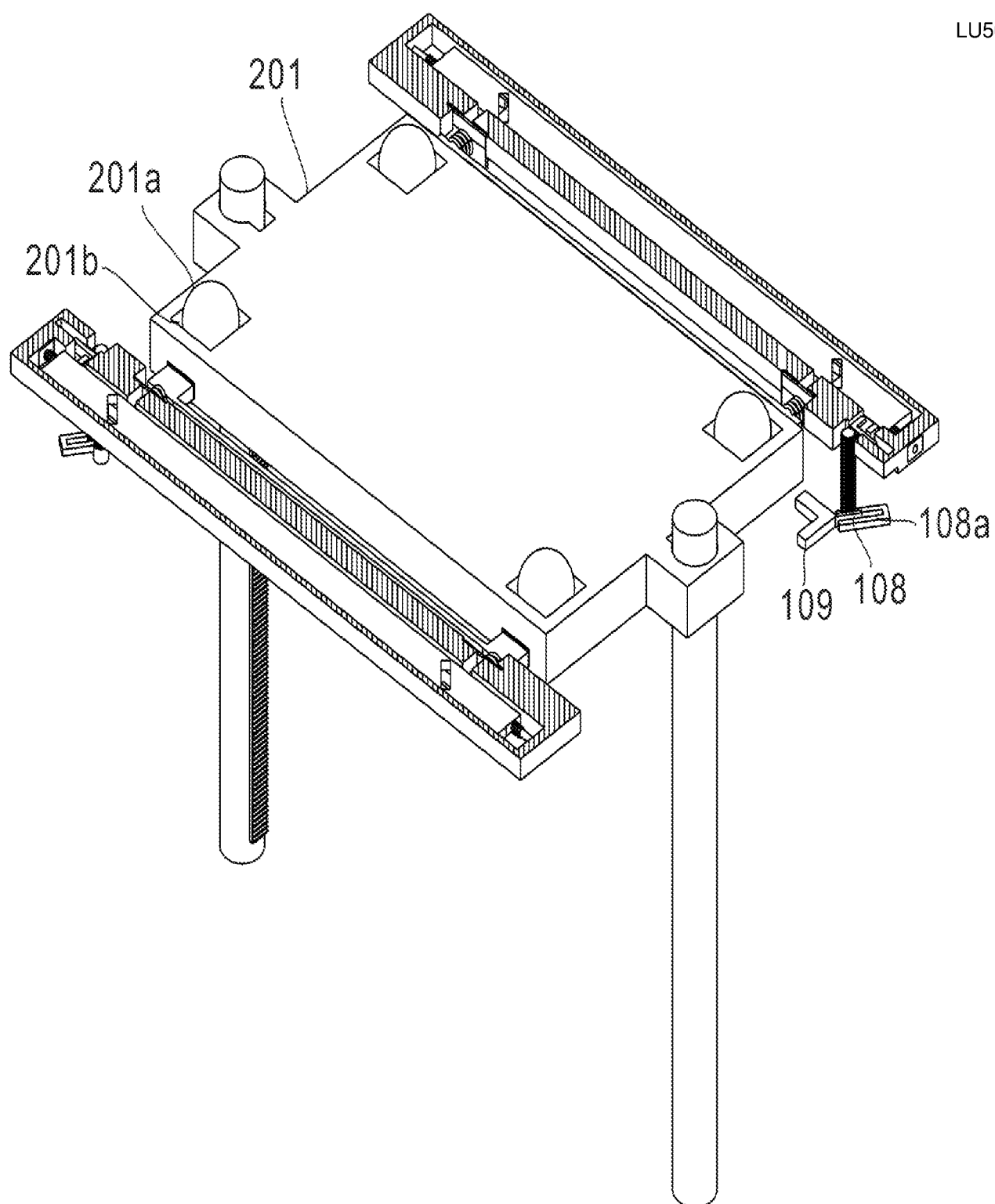
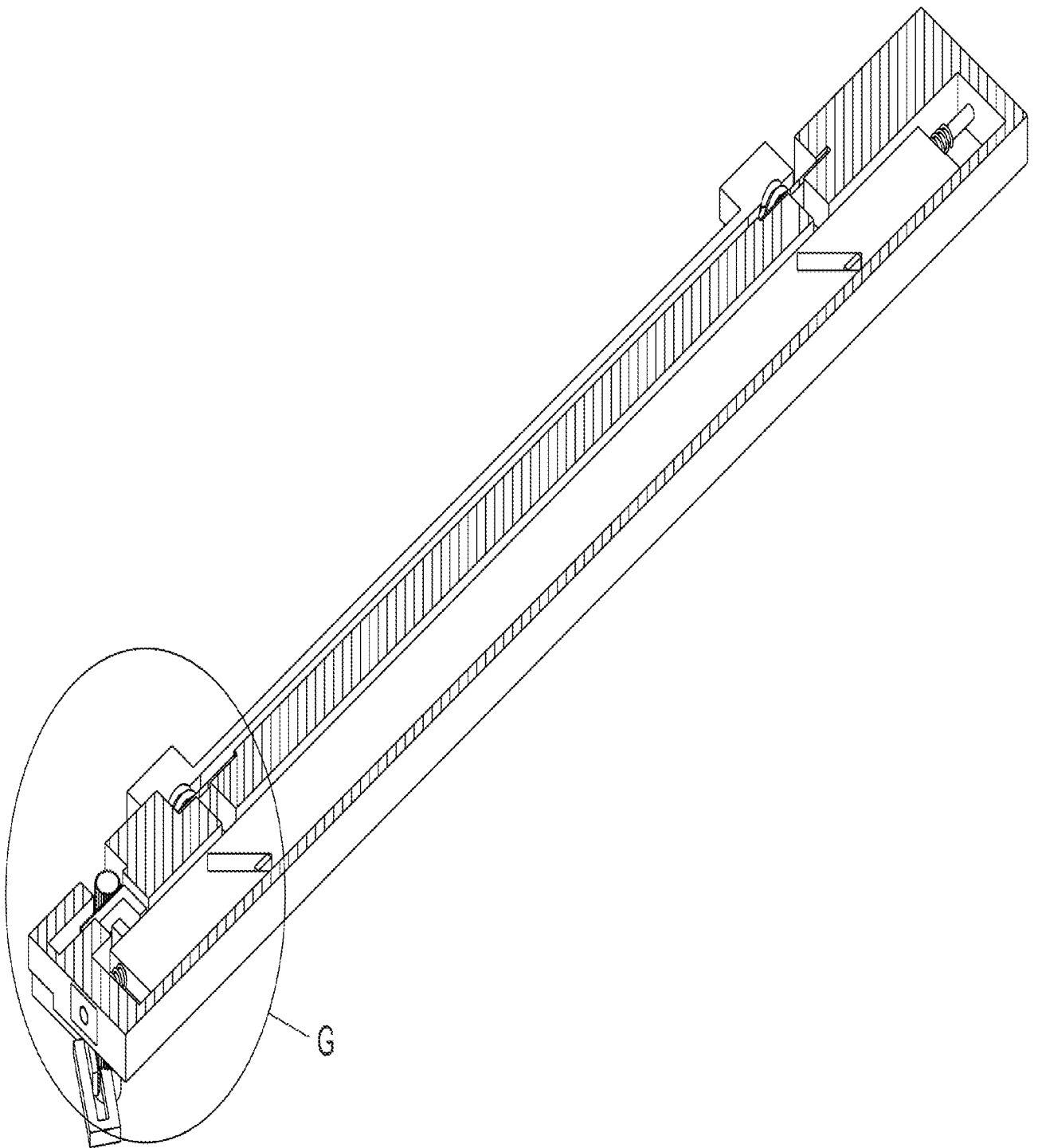


FIG. 4

**FIG. 5**

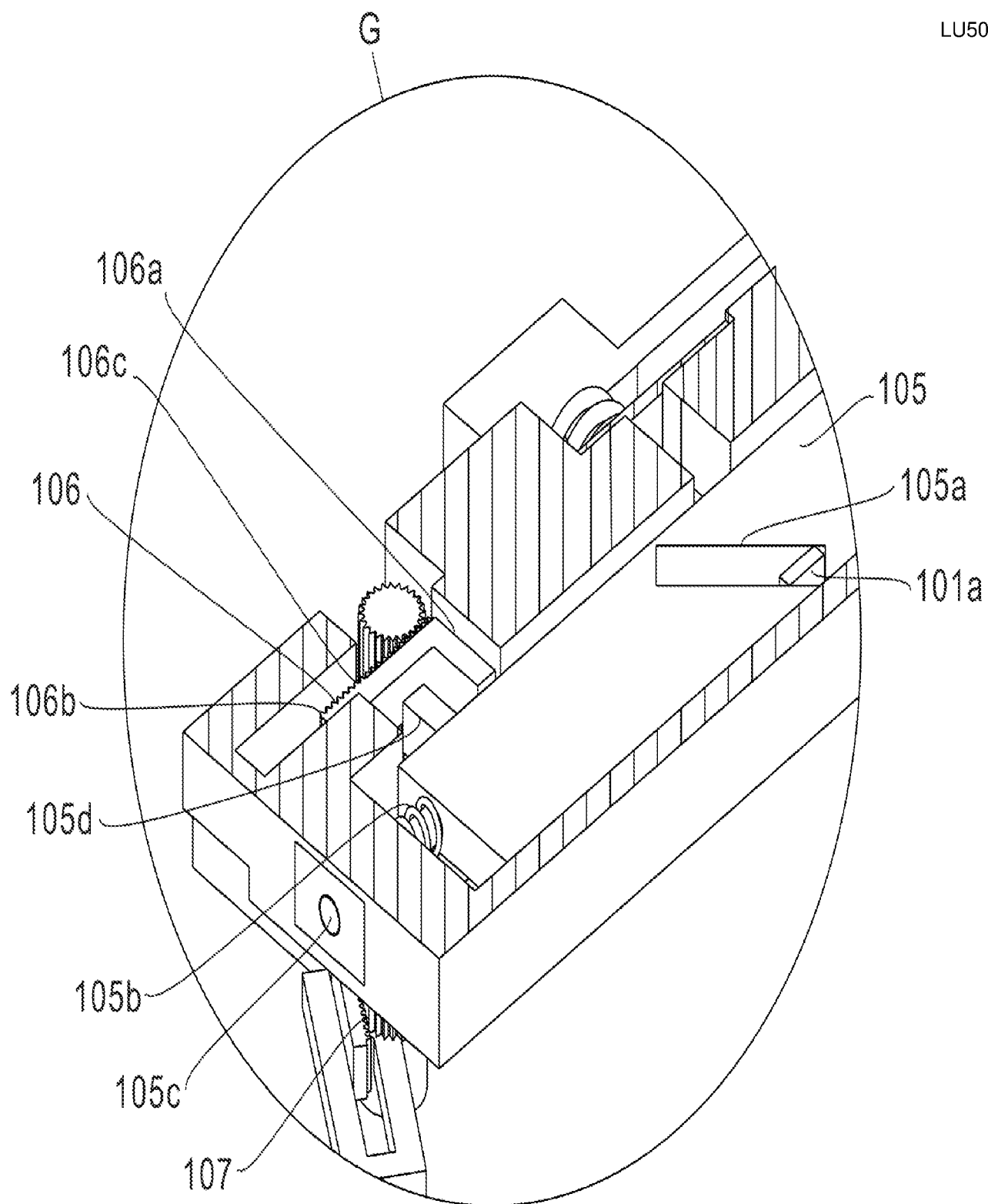


FIG. 6