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(54) **SHELF SYSTEM WITH POWER SUPPLY DEVICE**

REGAL MIT STROMVERSORGUNGSVORRICHTUNG

ÉTAGÈRES AVEC DISPOSITIF D'ALIMENTATION ÉLECTRIQUE

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(73) Proprietors:
• **Self Electronics Co., Ltd.**
Ningbo City, Zhejiang 315103 (CN)
• **SELF ELECTRONICS Germany GmbH**
51149 Köln (DE)
• **Lin, Wanjiang**
Ningbo City, Zhejiang 315103 (CN)

(72) Inventors:
• **LIU, Xiaoyun**
Ningbo, 315103 (CN)
• **XU, Kai**
Ningbo, 315103 (CN)

(74) Representative: **2K Patentanwälte Blasberg**
Kewitz & Reichel
Partnerschaft mbB
Schumannstrasse 27
60325 Frankfurt am Main (DE)

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Description

Technical field

[0001] The invention relates to the technical field of shelf systems comprising a power supply device.

Background of invention

[0002] In the context of energy saving and environmental protection, LED lamps are more and more used in the fields of home and commercial lighting because of their high light emission efficiency and good light-gathering performance. Among them, shelf lighting is a kind of commercial lighting. In the installation of existing shelf lighting, there are problems of messy and scattered power wiring methods, complicated installation process, and time-consuming problems, and it takes up more shelf space after installation, resulting in unnecessary waste of space and the problem of low utilization rate. In order to solve these problems, it has been proposed to set up power supply rails (tracks) in shelves or shelf systems, which can be used with the power supply head to avoid messy and scattered power supply wiring. However, the power supply rails are usually all exposed, so that they can easily corrode and be damaged. Moreover, the power supply rails are not waterproof, so it is difficult to apply such shelves or shelf systems in areas under high moisture conditions and humidity, where watertightness is needed.

[0003] Therefore, it is important to develop a waterproof and easy to install and dismantle power supply method and setup with important application value for power supply shelves and shelf systems with at least one power supply.

[0004] US 4 489 995 A discloses a shelf system, which is embodied as a refrigerated display cabinet comprising a vertical back board and a plurality of shelves mounted to the back board in a stacked configuration. At the front end of each shelf lighting fixtures are provided. For electric power supply, a central (fixed) power supply is provided, which is, however, not mounted to the back board but in a bottom air plenum of the display cabinet.

[0005] Vertical mounting slots are provided in the back board, in which electric outlet assemblies are slidably mounted, which consist of two parts and are mounted to each other and resiliently biased against each other.

[0006] The electric outlet assemblies are electrically connected in series by means of electric lines, each having identical lengths, resulting in different lengths. The electric lines are not provided with at least one magnetic element to be attracted by the back board.

[0007] WO 2005/027278 A1 discloses a shelf system with conducting rails integrated into support columns and carriers.

Summary of Invention

[0008] It is an object of the present invention to provide a shelf system comprising a back board with stacked configuration of the shelves including a power supply shelf, configured to reliably provide electric power to at least one shelf of the shelf system with a low-cost set-up that can be assembled, disassembled and modified in a versatile manner. According to a further aspect of the present invention there is to be provided a method for supplying electric power to at least one shelf in such a shelf system comprising a back board.

[0009] This problem is solved by a shelf system as claimed by claim 1, and by a method for supplying electric power to at least one shelf in such a shelf system as claimed by claim 11. Further advantageous embodiments are the subject-matter of the dependent claims.

[0010] According to a further embodiment, the first fixing member may be a T-shaped bump or protrusion provided on one side of the fixed power supply unit, configured to be inserted into a corresponding mounting hole of a back board. More specifically, by first tilting the fixed power supply unit relative to the plane of the back board, then inserting one of the two arms of the T-shaped bump or protrusion, then the protrusion itself and then the second of the two arms of the T-shaped bump or protrusion and then tilting backward the fixed power supply unit so as to be disposed in parallel with the plane of the back board, the T-shaped bump or protrusion may be fixed in a positive-fit manner in the mounting hole of the back board, so as to be disposed fixed at the location of the mounting hole on the back board. As an alternative, the two arms of the T-shaped bump or protrusion may be resiliently biased against a shaft of the T-shaped bump or protrusion, and may be pushed inward towards the shaft so that the shaft may be inserted into a mounting hole of the back board, and after releasing the two arms again, they may return back to their biased home position, to thereby fix the fixed power supply unit in a positive-fit manner in the mounting hole of the back board.

[0011] According to a further embodiment, the fixed power supply unit may be provided with a second socket, which may be disposed in particular on a side opposite to that side of the fixed power supply unit where the first socket is provided. Thus, power may also be supplied at the rear side of e.g. a back board of the shelf system.

[0012] According to a further embodiment, the fixed power supply unit may further comprise: a second base, one side of which is provided with the second socket; and a second top cover connected to the second base with a space or gap formed therebetween, and having a second insertion hole aligned with the second socket.

[0013] According to a further embodiment, the second base and the second top cover may be connected to each other through second connecting pieces arranged on both sides of the second socket.

[0014] According to a further embodiment, the sliding power supply unit may comprise: a first base, one side

of which is provided with the first socket; a first top cover connected to the first base with a space or gap formed therebetween, and having a first insertion hole 1 aligned with the first socket.

[0015] According to a further embodiment, the first base and the first top cover may be connected through first connecting pieces arranged on both sides of the first socket.

[0016] According to a further embodiment, a damping unit may be provided between the first base and the first top cover.

[0017] According to a further embodiment, the mounting hole may be a square hole.

[0018] According to a further embodiment, the power supply module may be provided with at least two fixed power supply units for each power supply module, and the fixed power supply units of each power supply module are electrically connected in sequence.

Technical effect of the present invention

[0019] The shelf system of the present invention have a simple structure, provide a convenient installation, are easy to disassemble and be modified, provide a good waterproof effect, are convenient in use, and provide excellent reliability and low manufacturing cost.

Overview on drawings

[0020] Hereinafter, the invention will be described with reference to the accompanying drawings, wherein:

FIG. 1 is a schematic structural diagram of a power supply device for the shelf system according to the present invention;

Fig. 2 is a schematic perspective front view of a shelf system of the present invention including a power supply module;

FIG. 3 is a partial structural schematic diagram of the back of the shelf system in the embodiment of Fig. 2;

Fig. 4 is a partial structural schematic diagram of the front of the shelf system in the embodiment of Fig. 2;

Fig. 5 is a partial exploded structure of the front of the shelf system in the embodiment of Fig. 2;

Fig. 6 is a schematic structural diagram of a power supply module of a shelf system according to a second embodiment of the present invention;

Fig. 7 is a schematic diagram of a partial structure of a power supply module (front) of a shelf system according to another embodiment of the present invention; and

Fig. 8 is a schematic diagram of a partial structure of a power supply module (back side) of a shelf system according to another embodiment of the present invention.

[0021] Throughout the drawings, the like reference nu-

merals designate the same or technically equivalent members or groups of members.

Detailed Description of Preferred Embodiments

[0022] Specific embodiments of the present invention will be described in further detail below based on the accompanying drawings. It should be understood that the following description of the embodiments of the present invention shall not be construed to delimit the scope of protection of the present invention.

[0023] As shown in Figs. 1 to 5, the power supply device of the claimed shelf system is generally suitable for supplying electric power to shelves. The power supply device includes two power supply modules 1000, which are preferably electrically connected to each other by a common power supply wire or strip, as shown in Fig. 3. The total number of such power supply modules 1000 may be set e.g. according to the total number of layers (shelves) of the shelf system. Generally, one power supply module 1000 may be provided for each layer of the shelf system. Of course, multiple layers or power supply modules 1000 may also be set for a single layer.

[0024] Each power supply module 1000 includes: a fixed power supply unit 100 intended to be fixedly positioned, stationary, at a predetermined location of a back board as outlined hereinafter, a sliding power supply unit 200 that can be moved on a back board by sliding to a desired position, if required, and a flexible conductive strip 300, which electrically connects the fixed power supply unit 100 and the associated sliding power supply unit 200. The fixed power supply unit 100 comprises a first fixing member 101 and is connected to a power supply (not shown in the drawings). The sliding power supply unit 200 comprises a first socket or plug-in interface 201 (see Fig. 5), and the two ends of the flexible conductive strip 300 are electrically connected to the fixed power supply unit 100 and the sliding power supply unit 200, respectively.

[0025] After the power supply module 1000 of this embodiment has been installed, e.g. fixedly mounted on a back board as outlined hereinafter in more detail, the fixed power supply unit 100 is connected to an external power supply for power supply, whereas the sliding power supply unit 200 can be moved relative to the fixed power supply unit 100 by sliding, e.g. along grooves or slots provided in the back board, so as to provide a power supply function at a specific position as actually required by the geometry of the shelf system to be supplied with electric power, while the flexible conductive strip 300 is bent accordingly by bending to supply electric power to the sliding power supply unit 200. For this purpose, the length of the flexible conductive strip 300 may basically correspond to the length of a longitudinal guiding slot 3002, 2002 provided in the back board 2000 plus the distance between the mounting position of the fixed power supply unit 100 at the back board to the associated guiding slot 3002, 2002, as shown in Fig. 3.

[0026] The fixed power supply units 100 of each power supply module 1000 are electrically connected sequentially, and in this embodiment, the power supply modules 1000 are electrically connected through the flexible conductive strip 300, which is convenient for folding and transportation.

[0027] All the above-mentioned components can be conveniently completed to provide a waterproof setting, that is, a flexible waterproof layer may be wrapped on the outside of all the components of a power supply module 1000. In this embodiment, the flexible conductive strip 300 is a wire with an insulating layer applied directly upon it, and the waterproof effect can be realized as long as the insulating layer is waterproof. Other parts or components of the power supply module 1000 are generally waterproofed by encapsulation.

[0028] According to the invention, the flexible conductive strip 300 is provided with at least one magnetic element 400. The magnetic element 400 can be attracted by the back board of the shelf system including e.g. a ferro-magnetic layer, so that the flexible conductive strip 300 can always maintain a general shape and does not project too far from the rear surface of the associated back board 2000, and is not easily entangled.

[0029] The first fixing member 101 should be easy to assemble and disassemble. In this embodiment, the first fixing member 101 is embodied as a T-shaped bump arranged on one side of the fixed power supply unit 100. The T-shaped bump may be fixedly mounted into a mounting hole of the back board, as outlined above.

[0030] In this embodiment, the sliding power supply unit 200 includes at least the following: a first base 202 provided with the first socket 201 on one side; a first top cover 203 connected to the first base 202 with a gap for accommodating a back board 2000 or similar holding plate, having a first insertion hole 2031 aligned with the first socket 201.

[0031] In this embodiment, the first base 202 and the first top cover 203 are connected through first connecting pieces 204 arranged on both sides of the first socket 201. In this embodiment, a damping unit is provided between the first base 202 and the first top cover 203 so as to maintain a positional relationship and gap between the first base 202 and the first top cover 203, e.g. including resilient members such as springs to resiliently bias the first base 202 and the first top cover 203 against each other. The damping unit may be also embodied as a plurality of protrusions, in particular elastic or resilient protrusions, but it may also be realized in a tight fit manner, and there are many ways, so that it is not necessary to go into the details.

[0032] The shelf system of this embodiment includes a back board 2000 and multiple shelves 3000 arranged e.g. one above the other as shown in Fig. 2. The corresponding back board 2000 above each shelf 3000 is provided with a mounting hole 2001 to be connected to the first fixing member 101 of an associated fixed power supply unit 100. Moreover, the back board 2000 comprises

at least one strip-shaped through-hole or guiding slot 2002 extending in a longitudinal direction (which may be a vertical direction of the shelf system to be supplied with electric power), so that each sliding power supply unit 200 can be moved by sliding along the corresponding slot 2002 to a desired position, e.g. a desired vertical position of a shelf system, for power supply, and hence is movably installed on the strip-shaped hole or guiding slot 2002.

[0033] In this embodiment, the mounting hole 2001 may be embodied as a square hole, of a shape corresponding to the shaft of a T-shaped bump or protrusion of an associated first power supply unit to be fixed on the back board.

[0034] As shown in Fig. 6 to 8, in another embodiment, the fixed power supply unit 100 is provided with a second socket 102 to enable a power supply in a shelf system, e.g. on the rear side or also front side of a back board of the shelf system..

[0035] The fixed power supply unit 100 further comprises a second base 103 and a second top cover 104 connected to each other. One side of the second base 103 is provided with the second socket 102, and the second top cover 104 is connected to the second base 103 with a gap between them, with the first socket aligned with the second socket 102 and including two jacks 1041.

[0036] The second base 103 and the second top cover 104 are connected through second connecting pieces 205 disposed on both sides of the second socket 102. Here, the second connecting piece 205 serves also as the first fixing member 101, and the second connecting piece 205 can be fixed through the square hole on the back board 2000.

[0037] The connectors in this embodiment may be in the form of buckles, etc., which are prior art and will not be described in detail.

[0038] As will become apparent to the skilled person, the above describes only preferred exemplary embodiments of the present invention, and shall not be construed to delimit the scope of protection of the present invention.

Claims

1. A shelf system, comprising a back board (2000), a plurality of shelves (3000) mounted to the back board (2000) one above the other and supplied with electric power, and a power supply device for supplying electric power to the plurality of shelves (3000), wherein the power supply device comprises at least one power supply module (1000), wherein

the back board (2000) comprises a strip-shaped through-hole or guiding slot (2002) extending in a longitudinal direction, and
each power supply module (1000) comprises:

a fixed power supply unit (100) having a first

fixing member (101) and configured to be electrically connected to a power supply, at least one sliding power supply unit (200) having a first socket (201), each sliding power supply unit (200) being slidably mounted on an associated strip-shaped through-hole or guiding slot (2002), and at least one flexible conductive strip (300) the two ends of which are electrically connected to the fixed power supply unit (100) and the at least one sliding power supply unit (200), respectively; wherein

a mounting hole (2001) is associated to said strip-shaped through-hole or guiding slot (2002), the first fixing member (101) of each fixed power supply unit (100) is mounted to the associated mounting hole provided at the back board so as to fixedly mount the fixed power supply unit (100) at a fixed location at the back board (2000), and wherein each flexible conductive strip (300) is provided with at least one magnetic element (400) configured to be attracted by the back board (2000).

2. The shelf system according to any of the preceding claims, wherein the first fixing member (101) is a T-shaped bump provided on one side of the fixed power supply unit (100).

3. The shelf system according to any of the preceding claims, wherein the fixed power supply unit (100) of each power supply module (1000) is provided with a second socket (102).

4. The shelf system according to claim 3, wherein the fixed power supply unit (100) of each power supply module (1000) further comprises:

a second base (103), one side of which is provided with the second socket (102); and a second top cover (104) connected to the second base (103) with a space or gap formed therebetween, and having a second insertion hole (1041) aligned with the second socket (102).

5. The shelf system according to claim 4, wherein the second base (103) and the second top cover (104) are connected to each other through second connecting pieces (205) arranged on both sides of the second socket (102).

6. The shelf system according to any of the preceding claims, wherein each sliding power supply unit (200) comprises:

a first base (202), one side of which is provided with the first socket (201);

a first top cover (203) connected to the first base (202) with a space or gap formed therebetween, and having a first insertion hole (2031) aligned with the first socket (201).

7. The shelf system according to claim 6, wherein the first base (202) and the first top cover (203) are connected through first connecting pieces (204) arranged on both sides of the first socket (201).

8. The shelf system according to claim 7, wherein a damping unit is provided between the first base (202) and the first top cover (203).

9. The shelf system according to claim 7, wherein the mounting hole (2001) is a square hole.

10. The shelf system according to any of preceding claims 1 to 5, wherein the power supply module (1000) is provided with at least two fixed power supply units (100) for each power supply module (1000), and the fixed power supply units (100) of each power supply module (1000) are electrically connected in sequence.

11. A method for supplying electric power to at least one shelf (3000) in a shelf system as claimed in any of claims 1 to 10, comprising the steps of:

mounting the first fixing member (101) of each fixed power supply unit (100) to the associated mounting hole (2001) provided at the back board (2000) so as to fixedly mount the fixed power supply unit (100) at a fixed location at the back board (2000), slidably mounting each sliding power supply unit (200) of the at least one sliding power supply unit (200) of each power supply device to an associated strip-shaped through-hole or guiding slot (2002) and moving each sliding power supply unit (200) of the at least one sliding power supply unit (200) along said strip-shaped through-hole or guiding slot (2002) to a position corresponding to the position of an associated shelf (3000) of the shelf system, for supplying electric power to said associated shelf (3000).

Patentansprüche

1. Regalsystem, mit einer Rückwand (2000), einer Vielzahl von Regalen (3000), die übereinander an der Rückwand (2000) montiert sind und mit elektrischem Strom versorgt werden, und einer Stromversorgungsvorrichtung zum Versorgen der Vielzahl von Regalen (3000) mit elektrischem Strom, wobei die Stromversorgungsvorrichtung mindestens ein Stromversorgungsmodul (1000) umfasst, wobei

die Rückwand (2000) ein streifenförmiges Durchgangsloch oder einen Führungsschlitz (2002) umfasst, der sich in einer Längsrichtung erstreckt, und
jedes Stromversorgungsmodul (1000) umfasst:

eine ortsfeste Stromversorgungseinheit (100), die ein erstes Befestigungselement (101) aufweist und so konfiguriert ist, dass sie elektrisch mit einer Stromversorgung verbunden werden kann,
mindestens eine verschiebbare Stromversorgungseinheit (200), die eine erste Buchse (201) aufweist, wobei jede verschiebbare Stromversorgungseinheit (200) verschiebbar auf einem zugeordneten streifenförmigen Durchgangsloch oder Führungsschlitz (2002) montiert ist, und
mindestens einen flexiblen leitfähigen Streifen (300), dessen zwei Enden jeweils elektrisch mit der festen Stromversorgungseinheit (100) bzw. der mindestens einen verschiebbaren Stromversorgungseinheit (200) verbunden sind; wobei

ein Montageloch (2001) dem streifenförmigen Durchgangsloch oder Führungsschlitz (2002) zugeordnet ist,
das erste Befestigungselement (101) jeder ortsfesten Stromversorgungseinheit (100) an dem zugeordneten Montageloch an der Rückwand angebracht ist, um die ortsfeste Stromversorgungseinheit (100) an einer ortsfesten Stelle an der Rückwand (2000) fest anzubringen, und
jeder flexible leitfähige Streifen (300) mit mindestens einem magnetischen Element (400) versehen ist, das so konfiguriert ist, dass es von der Rückwand (2000) angezogen wird.

2. Regalsystem nach einem der vorhergehenden Ansprüche, wobei das erste Befestigungselement (101) eine T-förmige Erhebung ist, die an einer Seite der ortsfesten Stromversorgungseinheit (100) vorgesehen ist.

3. Regalsystem nach einem der vorhergehenden Ansprüche, wobei die ortsfeste Stromversorgungseinheit (100) jedes Stromversorgungsmoduls (1000) mit einer zweiten Buchse (102) versehen ist.

4. Regalsystem nach Anspruch 3, wobei die ortsfeste Stromversorgungseinheit (100) jedes Stromversorgungsmoduls (1000) ferner umfasst:

eine zweite Basis (103), deren eine Seite mit der zweiten Buchse (102) versehen ist; und
eine zweite obere Abdeckung (104), die mit der zweiten Basis (103) verbunden ist, wobei ein

Zwischenraum oder eine Lücke dazwischen gebildet ist, und die ein zweites Einsteckloch (1041) aufweist, das mit der zweiten Buchse (102) ausgerichtet ist bzw. fluchtet.

5. Regalsystem nach Anspruch 4, wobei die zweite Basis (103) und die zweite obere Abdeckung (104) durch zweite Verbindungsstücke (205) miteinander verbunden sind, die auf beiden Seiten der zweiten Buchse (102) angeordnet sind.

6. Regalsystem nach einem der vorhergehenden Ansprüche, wobei jede verschiebbare Stromversorgungseinheit (200) umfasst:

eine erste Basis (202), deren eine Seite mit der ersten Buchse (201) versehen ist;
eine erste obere Abdeckung (203), die mit der ersten Basis (202) verbunden ist, wobei ein Zwischenraum oder eine Lücke dazwischen gebildet ist, und die ein erstes Einsteckloch (2031) aufweist, das mit der ersten Buchse (201) ausgerichtet ist bzw. fluchtet.

7. Regalsystem nach Anspruch 6, wobei die erste Basis (202) und die erste obere Abdeckung (203) durch erste Verbindungsstücke (204) miteinander verbunden sind, die auf beiden Seiten der ersten Buchse (201) angeordnet sind.

8. Regalsystem nach Anspruch 7, wobei zwischen der ersten Basis (202) und der ersten oberen Abdeckung (203) eine Dämpfungseinheit vorgesehen ist.

9. Regalsystem nach Anspruch 7, wobei das Montageloch (2001) ein quadratisches Loch ist.

10. Regalsystem nach einem der vorhergehenden Ansprüche 1 bis 5, wobei das Stromversorgungsmodul (1000) mit mindestens zwei ortsfesten Stromversorgungseinheiten (100) für jedes Stromversorgungsmodul (1000) versehen ist und die ortsfesten Stromversorgungseinheiten (100) jedes Stromversorgungsmoduls (1000) elektrisch in Reihe geschaltet sind.

11. Verfahren zum Versorgen von mindestens einem Regal (3000) in einem Regalsystem nach einem der Ansprüche 1 bis 10 mit elektrischem Strom, mit den Schritten:

Befestigen des ersten Befestigungselements (101) jeder ortsfesten Stromversorgungseinheit (100) an dem zugeordneten Befestigungsloch (2001), das an der Rückwand (2000) vorgesehen ist, um die feste Stromversorgungseinheit (100) an einer ortsfesten Stelle an der Rückwand (2000) fest zu befestigen,

Befestigen durch gleitendes Verschieben jeder verschiebbaren Stromversorgungseinheit (200) der mindestens einen verschiebbaren Stromversorgungseinheit (200) jeder Stromversorgungsvorrichtung an einem zugeordneten streifenförmigen Durchgangsloch oder Führungsschlitz (2002) und Bewegen jeder verschiebbaren Stromversorgungseinheit (200) der mindestens einen verschiebbaren Stromversorgungseinheit (200) entlang des streifenförmigen Durchgangslochs oder Führungsschlitzes (2002) an eine Position, die der Position eines zugeordneten Regals (3000) des Regalsystems entspricht, zum Versorgen des zugeordneten Regals (3000 mit elektrischem Strom).

Revendications

1. Un système d'étagères comprenant un panneau arrière (2000), une pluralité d'étagères (3000) montées sur le panneau arrière (2000) les unes au-dessus des autres et alimentées en énergie électrique, et un dispositif d'alimentation électrique pour alimenter en énergie électrique la pluralité d'étagères (3000), le dispositif d'alimentation électrique comprenant au moins un module d'alimentation électrique (1000),

le panneau arrière (2000) comprenant un trou traversant ou une fente de guidage en forme de bande (2002) s'étendant dans une direction longitudinale, et chaque module d'alimentation électrique (1000) comprend :

une unité d'alimentation électrique fixe (100) ayant un premier élément de fixation (101) et configurée pour être connectée électriquement à une alimentation électrique, au moins une unité d'alimentation électrique coulissante (200) ayant une première prise (201), chaque unité d'alimentation électrique coulissante (200) étant montée de manière coulissante sur un trou traversant ou une fente de guidage en forme de bande associée (2002), et au moins une bande conductrice flexible (300) dont les deux extrémités sont connectées électriquement à l'unité d'alimentation fixe (100) et à la ou aux unités d'alimentation coulissantes (200), respectivement ; dans lequel

un trou de montage (2001) est associé audit trou traversant en forme de bande ou à ladite fente de guidage (2002),

le premier élément de fixation (101) de chaque unité d'alimentation fixe (100) est monté sur le trou de montage associé prévu sur le panneau arrière de manière à monter de manière fixe l'unité d'alimentation fixe (100) à un emplacement fixe sur le panneau arrière (2000), et chaque bande conductrice flexible (300) est pourvue d'au moins un élément magnétique (400) configuré pour être attiré par le panneau arrière (2000).

2. Le système d'étagères selon l'une quelconque des revendications précédentes, dans lequel le premier élément de fixation (101) est une bosse en forme de T prévue sur un côté de l'unité d'alimentation fixe (100).

3. Le système d'étagères selon l'une quelconque des revendications précédentes, dans lequel l'unité d'alimentation fixe (100) de chaque module d'alimentation (1000) est dotée d'une seconde prise (102).

4. Le système d'étagères selon la revendication 3, dans lequel l'unité d'alimentation fixe (100) de chaque module d'alimentation (1000) comprend en outre :

une seconde base (103), dont un côté est doté de la seconde prise (102) ; et un second couvercle supérieur (104) relié à la seconde base (103) avec un espace ou un interstice formé entre eux, et ayant un second trou d'insertion (1041) aligné avec la seconde prise (102).

5. Le système d'étagères selon la revendication 4, dans lequel la seconde base (103) et le second couvercle supérieur (104) sont reliés l'un à l'autre par des secondes pièces de connexion (205) disposées des deux côtés de la seconde prise (102).

6. Le système d'étagères selon l'une quelconque des revendications précédentes, dans lequel chaque bloc d'alimentation coulissant (200) comprend :

une première base (202), dont un côté est pourvu de la première prise (201) ; un premier couvercle supérieur (203) relié à la première base (202) avec un espace ou un interstice formé entre eux, et ayant un premier trou d'insertion (2031) aligné avec la première prise (201).

7. Le système d'étagères selon la revendication 6, dans lequel la première base (202) et le premier couvercle supérieur (203) sont reliés par des premières pièces de connexion (204) disposées des deux côtés de la première prise (201).

8. Le système d'étagères selon la revendication 7, dans lequel une unité d'amortissement est prévue entre la première base (202) et le premier couvercle supérieur (203). 5
9. Le système d'étagères selon la revendication 7, dans lequel le trou de montage (2001) est un trou carré.
10. Le système d'étagères selon l'une quelconque des revendications précédentes 1 à 5, dans lequel le module d'alimentation électrique (1000) est pourvu d'au moins deux unités d'alimentation électrique fixes (100) pour chaque module d'alimentation électrique (1000), et les unités d'alimentation électrique fixes (100) de chaque module d'alimentation électrique (1000) sont connectées électriquement en séquence. 10 15
11. Un procédé d'alimentation en énergie électrique d'au moins une étagère (3000) dans un système d'étagères selon l'une quelconque des revendications 1 à 10, comprenant les étapes consistant à : 20
- monter le premier élément de fixation (101) de chaque unité d'alimentation fixe (100) sur le trou de montage associé (2001) prévu sur le panneau arrière (2000) de manière à monter de manière fixe l'unité d'alimentation fixe (100) à un emplacement fixe sur le panneau arrière (2000), 25 30
- monter de manière coulissante chaque unité d'alimentation coulissante (200) de l'au moins une unité d'alimentation coulissante (200) de chaque dispositif d'alimentation sur un trou traversant en forme de bande ou une fente de guidage associée (2002) et déplacer chaque unité d'alimentation coulissante (200) de l'au moins une unité d'alimentation coulissante (200) le long dudit trou traversant en forme de bande ou de ladite fente de guidage (2002) jusqu'à une position correspondant à la position d'une étagère associée (3000) du système d'étagères, 35 40
- pour alimenter en énergie électrique ladite étagère associée (3000). 45

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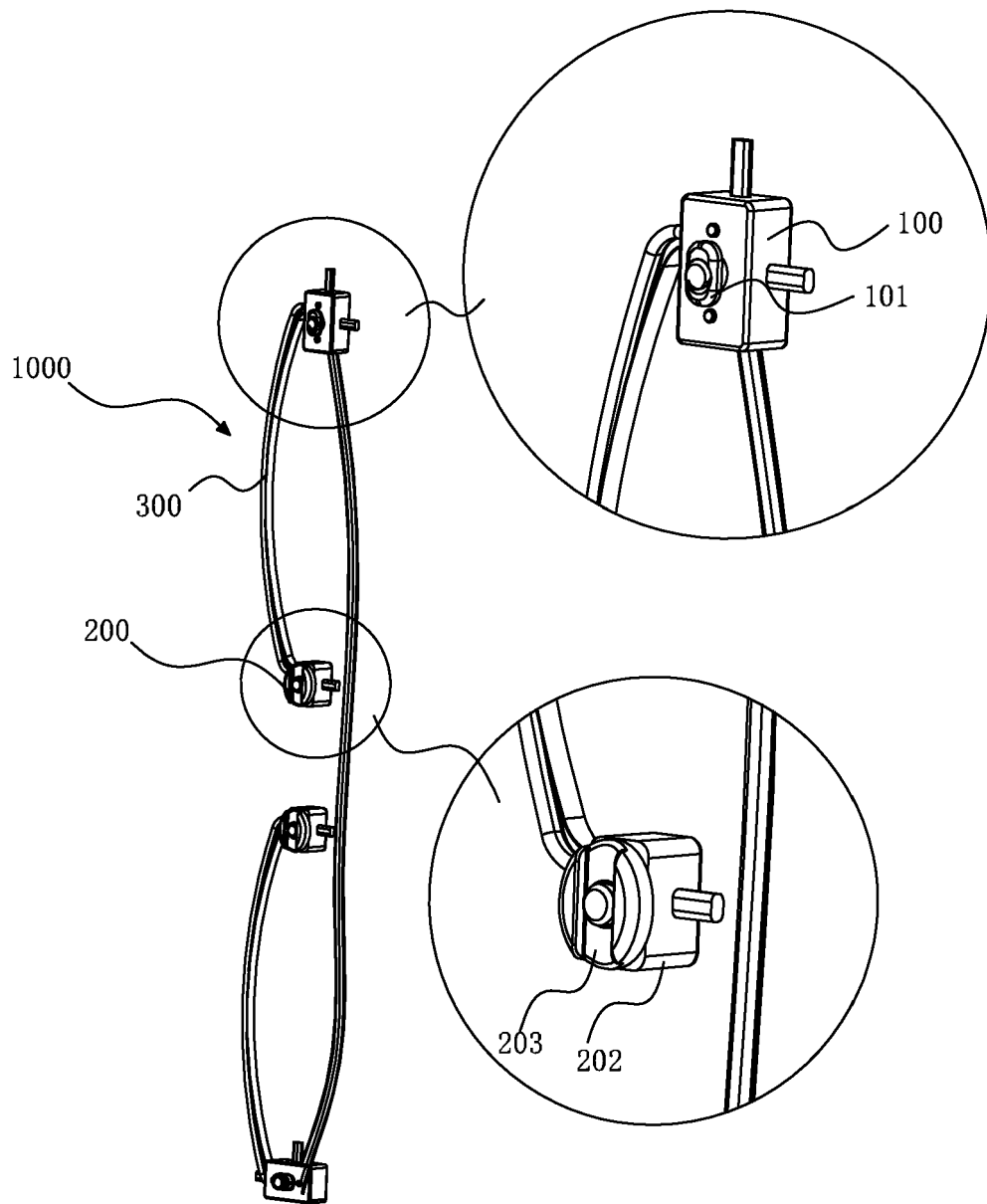


FIG. 1

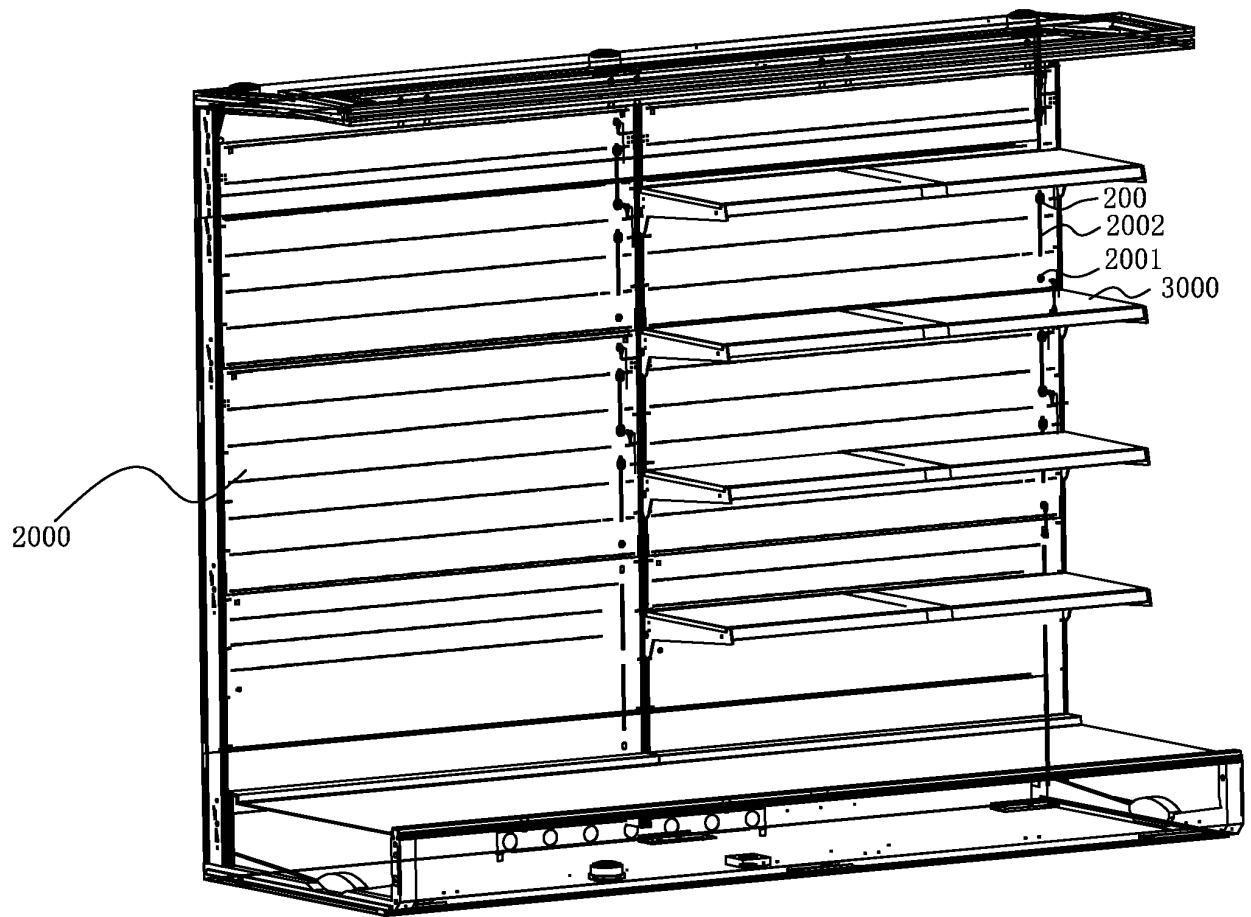


FIG. 2

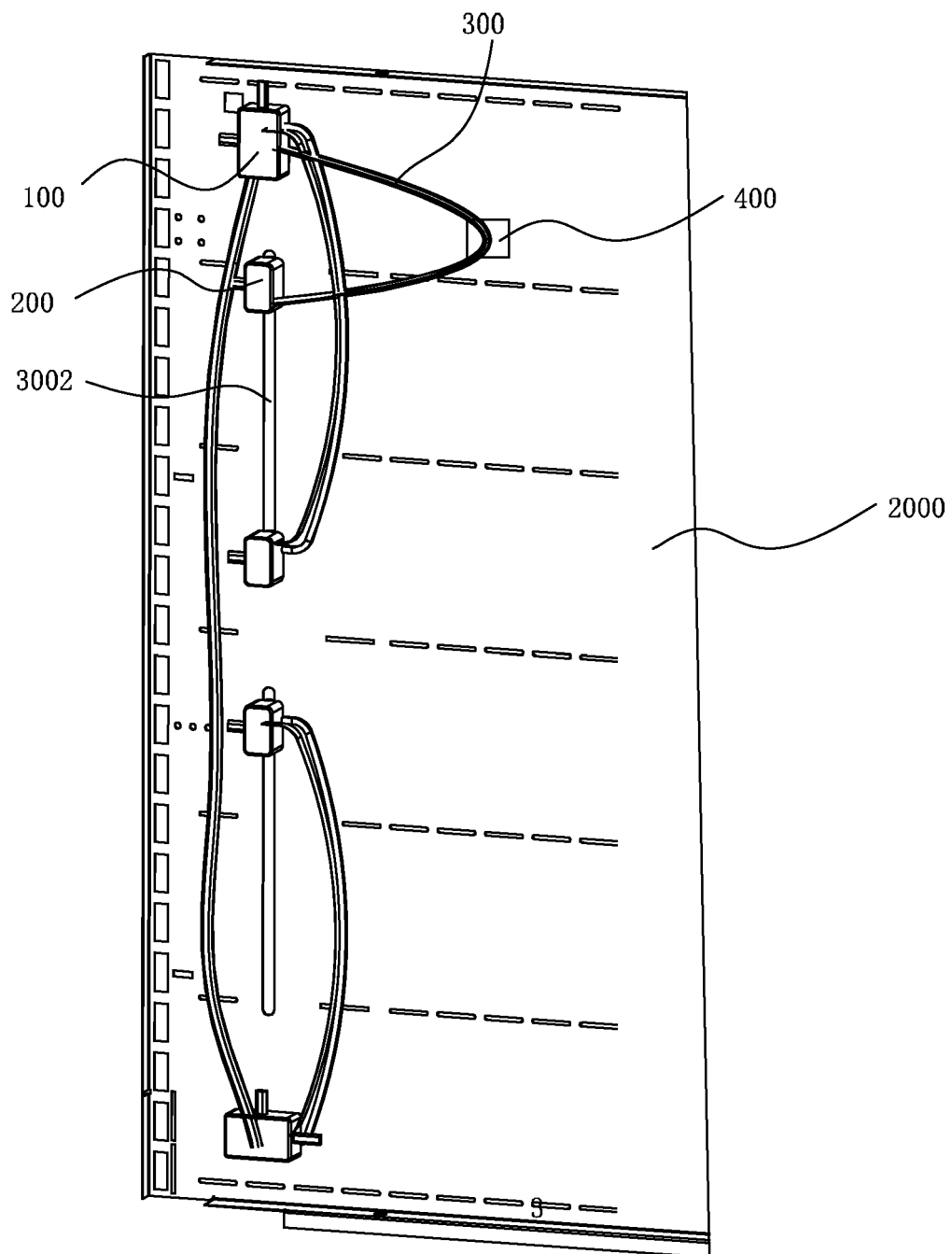


FIG. 3

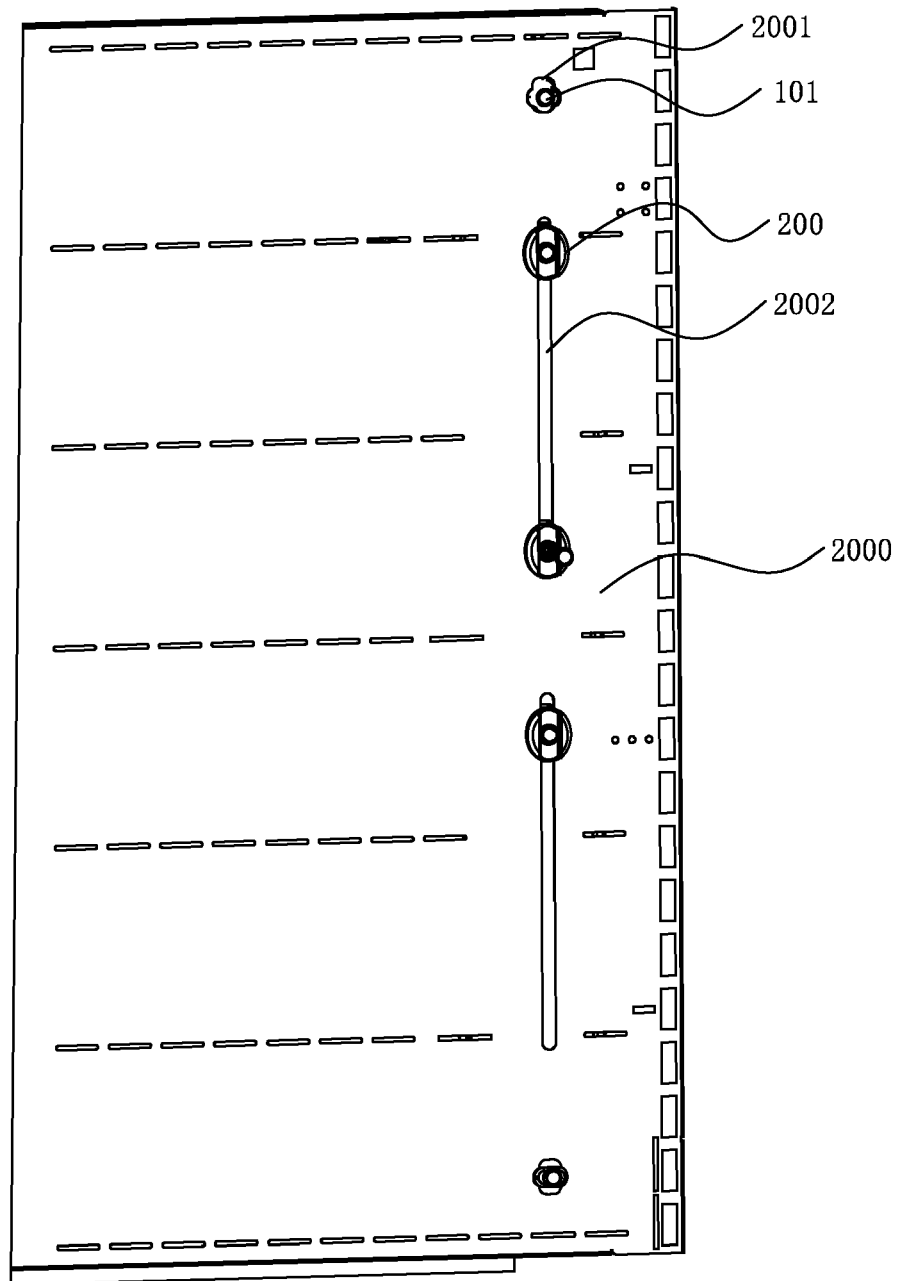


FIG. 4

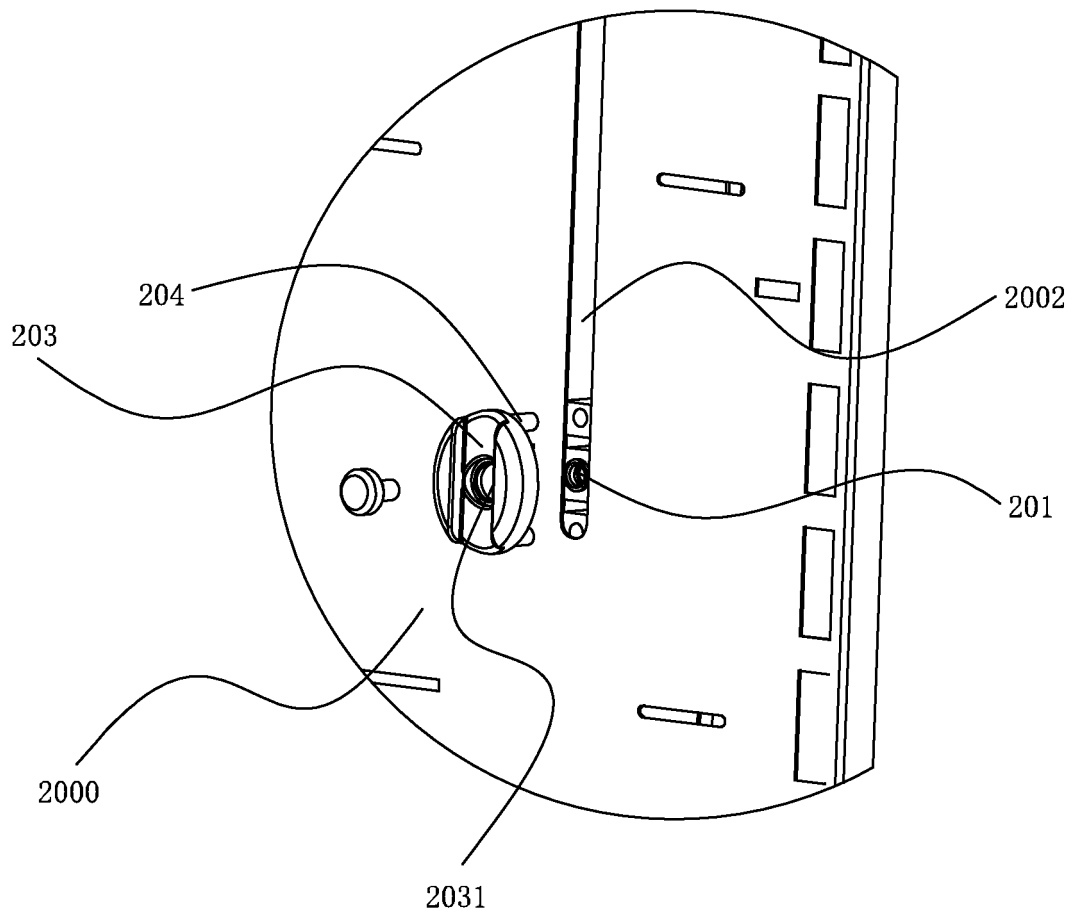


FIG. 5

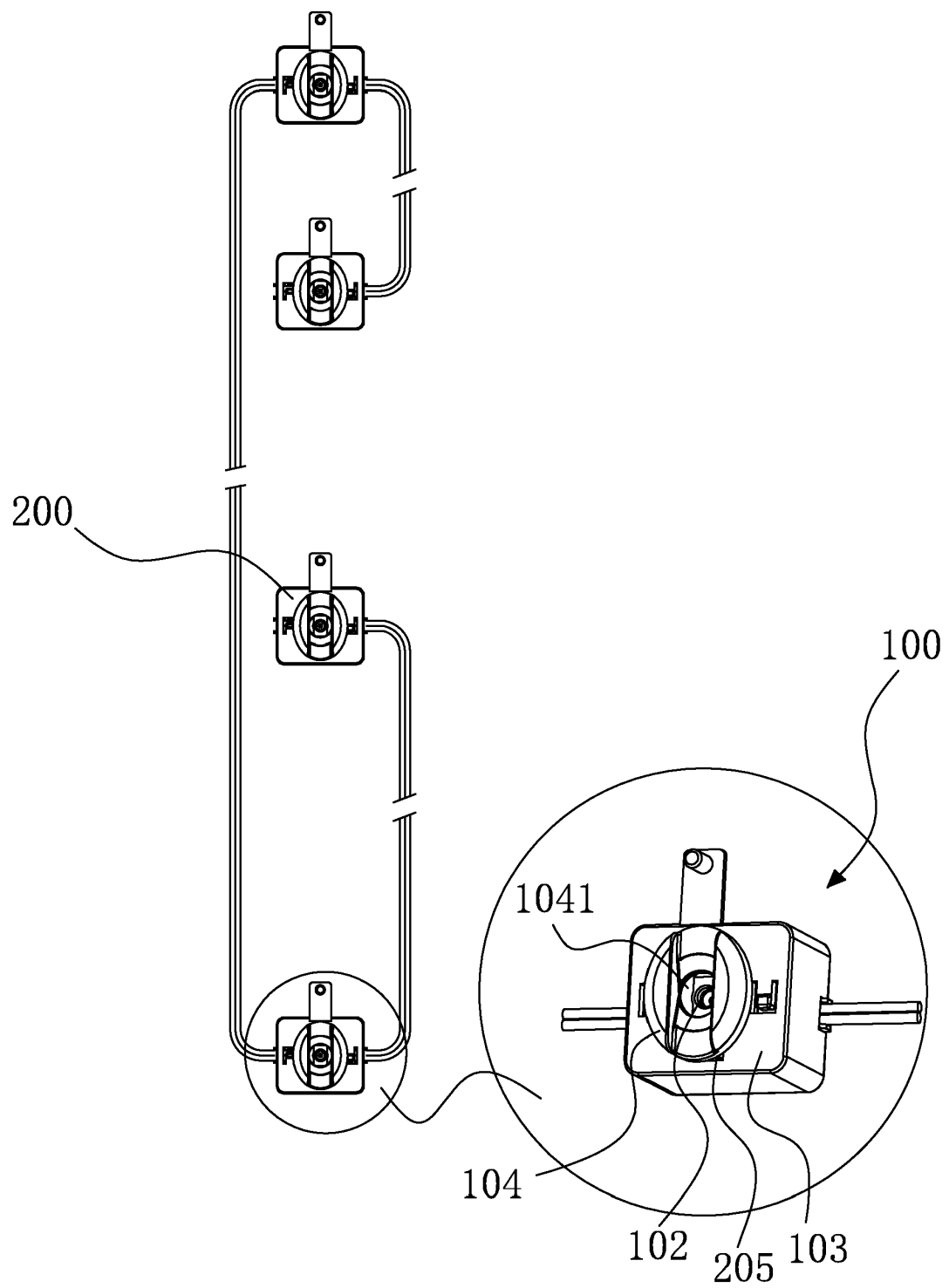


FIG. 6

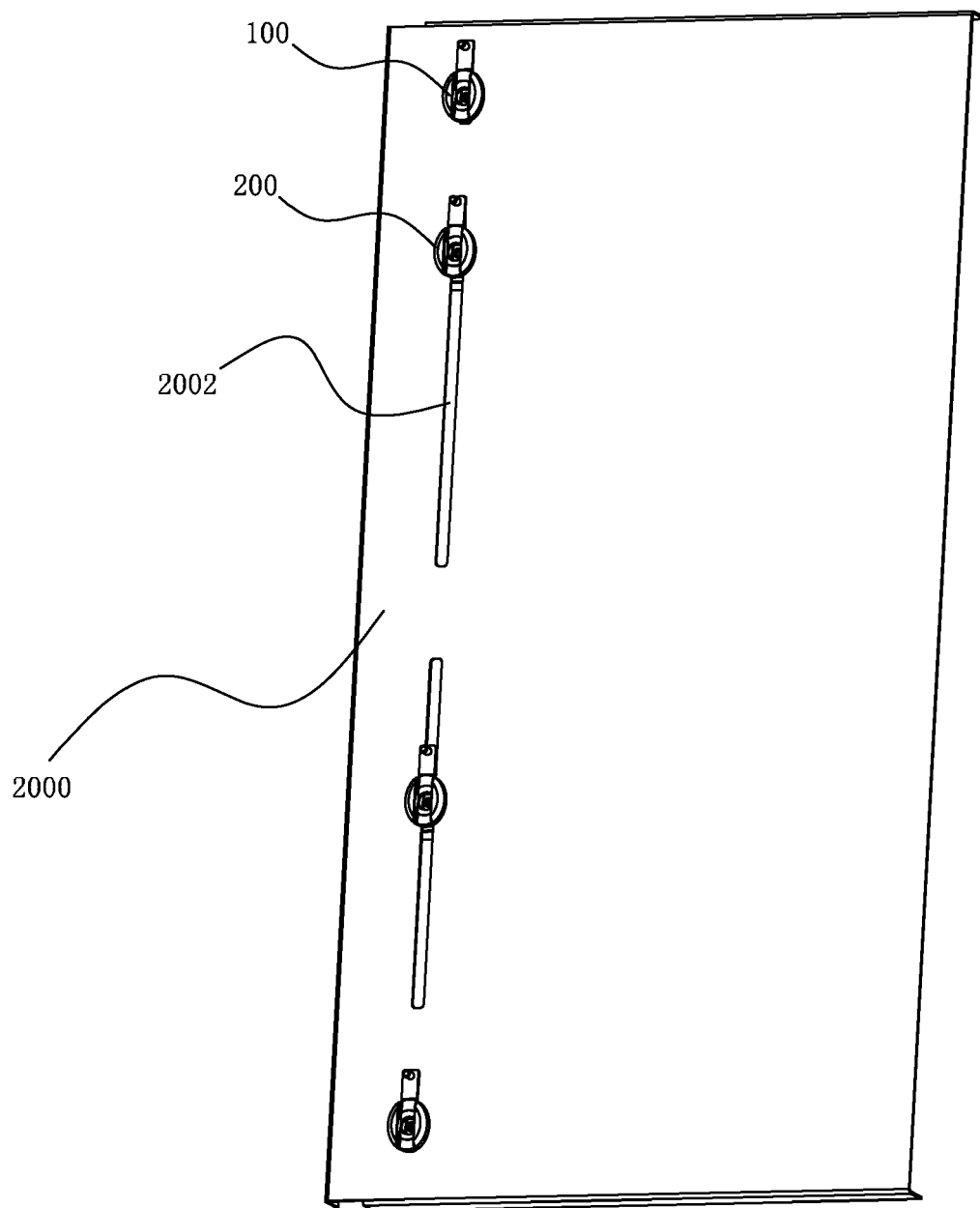


FIG. 7

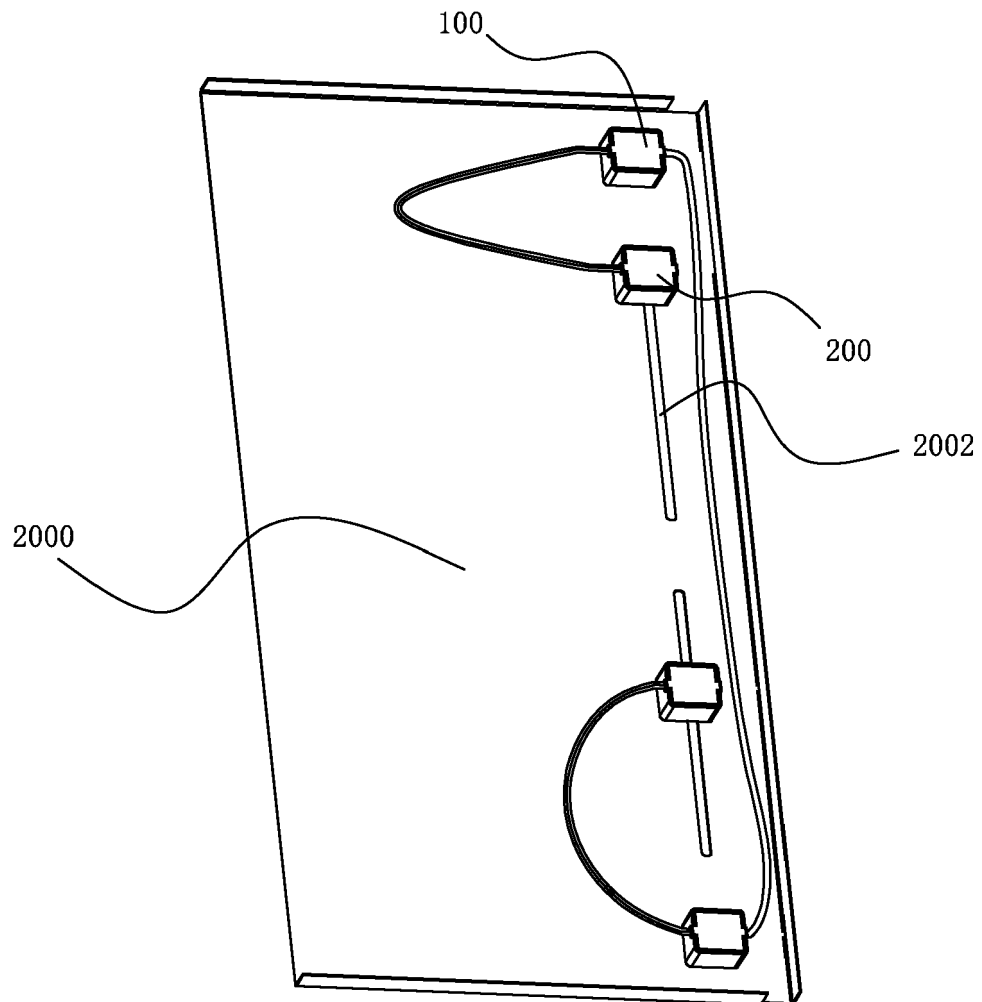


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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