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(54) **SWITCH DEVICE**

SCHALTVORRICHTUNG

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Description

Field of Disclosure

[0001] Embodiments of the present disclosure relate to a switch device, and particularly to a switch device for controlling multiple switch units.

Background of the disclosure

[0002] The current mechanical switch device usually uses one switch button to control one switch unit, and at most uses one switch button to control two switch units. To achieve control of multiple switch units in one switch device, multiple switch buttons are usually disposed parallelly in one switch device to operate different switch units. There is a gap among the multiple switch buttons which are arranged together, the width of each gap may be varied and the slanting angle of each switch button may also be inconsistent. This causes unpleasing appearance of the switch device. Moreover, arrangement of the multiple switch buttons on a limited surface of the switch device will cause the surface area of each button smaller, which is harmful for the user's convenient and accurate operation on the buttons.

[0003] US 2010/108485 A1 discloses a switch device in accordance with the preamble of claim 1. US 2001/002127 A1 discloses a gimbal mounted joy stick. US 2002/056621 A1 discloses a multidirectional input device wherein a push-button switch in the input device is pushed by a protrusion formed at one end of a support portion of an interlock member. US 2004/020751 A1 discloses a swing type multi-way switch wherein a pair of side walls of an operation knob has tongue-like projections that are formed integrally therewith and hang down from the lower edges of the knob for contacting switch elements.

[0004] Therefore, it is desirable to provide a switch device that can control multiple switch units, and has a pleasing appearance and easy-to-operate characteristic.

Summary of the disclosure

[0005] An object of the present disclosure is to provide a switch device which is used to solve

[0006] This object is solved by the features of claim 1.

[0007] According to another embodiment of the present disclosure, a first end of the support rod is fixed to a center of the operation panel, a second end of the support rod extends into a support slot at the center of the base body, and the support rod is rotatably supported in the support slot such that the support rod can swing along with the slant motion of the operation panel.

[0008] According to another embodiment of the present disclosure, a first shaft is pivotally supported on the base body, a through slot is provided on the first shaft in an axial direction of the first shaft, the support rod passes through the through slot and is pivotally supported on

the first shaft via a second shaft on the support rod, and an axial direction of the first shaft is perpendicular to the axial direction of the second shaft.

[0009] According to another embodiment of the present disclosure, the reset mechanism includes a spring and a reset pad located in the support slot and has a contact plate on the second end of the support rod. Furthermore the spring forces the reset pad to abut against the contact plate, and the reset pad is movably guided in the support slot in a direction perpendicular to a plane of the operation panel in the balanced state.

[0010] According to another embodiment of the disclosure, a periphery of the contact plate is circular, and on a side of the contact plate in contact with the reset pad a boss is provided on the circular periphery of the contact plate to contact the reset pad.

[0011] According to another embodiment of the present disclosure, the reset mechanism includes a leaf spring in the support slot and has a contact plate at the second end of the support rod; and the leaf spring abuts against the contact plate.

[0012] According to another embodiment of the present disclosure, the second end of the support rod has a ball head, which is positioned on the base body by a positioning seat to form a spherical hinge.

[0013] According to another embodiment of the disclosure, a contact plate is arranged between the first end and second end of the support rod, the reset mechanism comprises a spring located in the support slot, and the spring is held between a positioning seat and the contact plate.

[0014] According to another embodiment of the present disclosure, a guide slot is provided on the base body, and the support rod is guided by the guide slot.

[0015] According to another embodiment of the present disclosure, at least two switch units are distributed asymmetrically relative to a center of the operation panel.

[0016] The switch device of the various embodiments of the present disclosure provides a single switch panel that can pivot and reset in various directions such that multiple switch units can be controlled only through the single switch panel. The single switch panel of the switch device avoids existence of the potential gap and unevenness among the multiple switch panels. Therefore, the switch device of the present disclosure has a more pleasing appearance. Moreover, since the single switch panel can have a relatively larger operating surface, the user can position and operate the switching panel more easily. This makes the operation of the switch device of the disclosure more convenient.

Brief description of drawings

[0017] The above and other objects and characteristics of the present disclosure shall be made more apparent in conjunction with the following detailed description with reference to the accompanying figures. In the fig-

ures,

Fig. 1 is an exploded view of a switch device according to an embodiment of the present disclosure;
 Fig. 2 shows a base body of the switch device in Fig. 1;
 Fig. 3 shows a first shaft of the switch device in Fig. 1;
 Fig. 4 shows a support rod of the switch device in Fig. 1;
 Fig. 5 shows a cross-sectional view of the switch device in Fig. 1, in which the operation panel is in a balanced position;
 Fig. 6 shows a cross-sectional view of the switch device in Fig. 1, in which the operation panel is in an slanted state;
 Fig. 7 shows operable positions of the operation panel of the switch device in Fig. 1;
 Fig. 8 is an exploded view of a switch device according to another embodiment of the present disclosure;
 Fig. 9 is a partially enlarged view of the cross section of the switch device in Fig. 8;
 Fig. 10 shows the base body of the switch device in Fig. 8;
 Fig. 11 shows a positioning seat of the switch device in Fig. 8.

[0018] Throughout the above figures, the same reference numbers are understood as designating the same, similar or corresponding characteristics or functions.

Detailed Description of Preferred Embodiments

[0019] Reference will be made to embodiments of the present disclosure, and one or more examples of embodiments are shown in the figures.

[0020] Fig. 1 is an exploded view of the switch device according to one embodiment of the present disclosure. The switch device includes a base body 1, and a support slot 11 perpendicular to an end face of the base body 1 is disposed at a center of the base body 1. Multiple through holes 12 are distributed around the support slot 11, at least one switch unit 2 (four switch units are shown in Fig. 1) may be mounted to the base body 1, and an operable portion 21 of the switch unit 2 extends out of the base body 1 through the through hole 12. Each switch unit 2 is a known push button switch unit, and its operable portion 21 is a button. The characteristic of this type of push button switch unit is that when the button is pressed for the first time, the switch unit is closed; when the button is pressed again, the switch unit is opened. Each switch unit 2 may be connected to a separate circuit to control the on-off of the circuit.

[0021] The switch device further includes an operation panel 3. The operation panel 3 is made of a hard material, for instance, the hard plastic. The operation panel 3 is movably connected to the base body 1 through the support rod 4. The support rod 4 is also made of a hard material, preferably being made of metal.

[0022] Specifically, a first end of the support rod 4 is fixed to the center of the operation panel 3, and its second end extends into the support slot 11 at the center of the base body 1. A side wall 112 of the support slot 11 of the base body 1 is provided with a support hole 13 (see Fig. 2). With reference to Fig. 3, a shaft end 60 of two ends of a first shaft 6 extends into the support hole 13, and a shaft shoulder 62 thereon abuts against the side wall 112, such that the first shaft 6 is rotatably positioned on the base body 1 and goes across the support slot 11 in an axial direction of the first shaft. The first shaft 6 is provided with a through slot 61 in the axial direction of the first shaft 6. The support rod 4 passes through the through slot 61 and is pivotally supported in a shaft hole 63 on the first shaft 6 via a second shaft 41 (see Fig. 4) on the support rod 4, and the axial direction of the first shaft 6 is arranged perpendicular to the axial direction of the second shaft 41. Thus, the support rod 4 may swing in the axial direction of the first shaft 6 in the through slot 61 on the first shaft 6. At the same time, since the first shaft 6 is also pivotally supported on the base body 1, the support rod 4 may also rotate with the first shaft 6 relative to the base body 1. Advantageously, a portion 43 of the support rod 4 located in the through slot 61 has a larger width to facilitate arrangement of the second shaft 41 and facilitate guidance of the support rod 4 in the through slot 61 in the swing direction to avoid torsion.

[0023] Since the first shaft 6 and the second shaft 41 are perpendicular to each other, the support rod 4 supported by the two shafts may therefore achieve rotation in any direction by collaboration of the rotation motion of the two shafts. Thus, when the operation panel 3 is pressed and slanted in any direction, the support rod 4 can swing with the operation panel 3 without limiting the slant of the operation panel 3. At the same time, the operation panel 3 is also supported on the base body 1 through the support rod 4 and the two shafts without being disengaged therefrom.

[0024] Since the operation panel 3 may be pressed in any direction to be slanted, the operation panel 3 may use its surface facing the base body 1 to contact and press the respective switch units located in different orientations relative to the center of the operation panel 3. Therefore, each switch unit 2 is no longer limited to be distributed only at a position that is reachable by the turning of the operation panel 3 around one shaft, but can be distributed in any orientation around the center of the operation panel 3 as needed. Particularly, at least two of the switch units 2 may not be centrosymmetrically distributed relative to the center of the operation panel 3. As a result, on the premise of space permission and convenient operation convenience, it is possible to install any number of switch units 2 around the support slot 11 in the base body 1, and the operation panel 3 may be pressed and slant towards each of the switch units 2 and drive the switch unit 2. Advantageously, the switch device may include one to eight switch units 2. Moreover, the multiple switch units 2 may advantageously be distribut-

ed evenly around the center of the operation panel 3 to maximize the included angle among between the respective adjacent switch units, thereby avoiding misoperation when of possibly pressing the multiple switch units 2 at the same time might be pressed at the same time by when the operation panel 3 when the operation panel 3 slants in one direction.

[0025] The switch device further includes a reset mechanism 5 to drive the operation panel 3 to restore from any slant state relative to the base body 1 to a balanced state. The balanced state means a state in which the operation panel 3 does not press any of the multiple switch units 2.

[0026] In the embodiment shown in Figs. 1-6, the reset mechanism 5 includes a spring 51 and a reset pad 52 located in the support slot 11. One end of the spring 51 abuts against the bottom wall 111 of the support slot 11, and the other end abuts against a side of the reset pad 52. A contact plate 42 is provided on the second end of the support rod 4. The spring 51 is preloaded to force the other side of the reset pad 52 abutting against the contact plate 42. An end face of the reset pad 52 has the shape and size substantially the same as the end face of the support slot 11 such that the reset pad 52 is movably guided in a direction perpendicular to the plane of the operation panel 3 in the balanced state (i.e., the axial of the support slot 11). Advantageously, a groove may be provided on the periphery of a side of the reset pad 52 in contact with the spring 51 so as to be fixed with the spring 51 (especially a spiral spring). On one side of the reset pad 52 in contact with the contact plate 42 may be formed an inwardly recessed receiving cavity to receive the contact plate 42. Advantageously, the periphery of the contact plate 42 is circular and the circular periphery of the contact plate 42 on the side in contact with the reset pad 52 may have an annular boss 421. As such, regardless of the direction in which the support rod 4 is slanted with the operation panel 3, the annular boss 421 on the contact plate 42 is in contact with the reset pad 52 on only one point on the edge thereof. This will help to correctly reset the operation panel by the reset pad 52, as will be described later in more detail.

[0027] As shown in Fig. 5, when the user does not press the operation panel 3, the spring 51 loads the contact panel 42 through the reset pad 52 in the axial direction of the support slot 11 and perpendicular to the end face of the base body 1. Since the force-receiving direction of the contact plate 42 is perpendicular to the end face of the base body 1, the support rod 4 will be maintained in the axial direction of the support slot 11 and in a direction perpendicular to the end face of the base body 1. As a result, the operation panel 3 fixed with the first end of the support rod 4 is thus maintained at a position parallel to the end face of the base body 1. At this time, since one side of the operation panel 3 facing the base body 1 is flat, the distances between the side and the buttons 21 of the respective switch units 2 are the same, such that the operation panel 3 does not press the button

21 of any switch unit 2, that is, in a balanced state. It is feasible to arrange the position of each switch unit 2 in a way of enabling the top of each button 21 just contact the operation panel 3 or slightly pressed by the operation panel 3 without reaching the stroke of switching the switch unit 2 in the balanced state, or. As an alternative, it is also possible to achieve such contact or slightly pressed state by providing an additional pad between the operation panel 3 and the button 21. As such, the operation panel 3 may be supported by each button 21 around its center, thereby avoiding the shaking of the operation panel 3.

[0028] As shown in Fig. 6, when the user applies a force F1 to the operation panel 3 towards the direction of a switch unit 2, the operation panel 3 slants towards the force applying direction, and drives the button 21 of the corresponding switch unit 2 at the position to be pressed, such that the switch unit 2 switches from the opened state to the closed state, or from the closed state to the opened state. At this time, the support rod 4 slants as the operation panel 3 slants, and drives the contact plate 42 to slant to press the reset pad 52 at a point in the slant direction on the periphery thereof. The reset pad 52, as guided by the support slot 11, presses the spring 51 downwardly along the support slot 11 to accumulate the restoring force.

[0029] When the user no longer presses the operation panel, the restoring force of the spring 51 lifts the reset pad 52. The reset pad 52 applies a restoring force to the contact plate 42 at the point in contact with the contact plate 42, such that the contact plate 42, together with the support rod 4 and the operation panel 3, rotate in the opposite direction to the slant direction until the contact plate 42 rotates to a position parallel to the end face of the reset pad 52. At this time, the reset pad 52 evenly applies the restoring force to the contact plate 42 on the entire periphery of the contact plate 42, instead of only on a point. Since a resultant moment received by the contact plate 42 is zero, the contact plate 42 will no longer rotate and will be kept in a balanced position instead. As a result, the operation panel 3 returns to the aforesaid balanced position, to facilitate the next pressing operation.

[0030] When the operation panel 3 is pressed again, it is feasible to select to press the same switch unit 2 as in the previous operation, or press any switch unit 2 different from the one in the previous operation. Since the first shaft 6 and the second shaft 41 rotate in combination, the force-applying point for applying the force F2 on the operation panel 3 upon pressing next time may be at a position not centrosymmetrical with the point for applying the force F1 at the previous time about the center of the operation panel 3, for example at a position after rotation about the center by 90 degree (as shown in Fig. 7), such that the operation panel 3 slants in any direction asymmetric with the previous slant direction to operate other switch units 2.

[0031] The spring 51 of the reset mechanism 5 may

also be any other element, such as a leaf spring, that can achieve the elastic restoring force. In the case that the spring 51 is a leaf spring, the reset pad 52 may be omitted, and the leaf spring 51 is directly in contact with the contact plate 42. Since the leaf spring 51 has a larger surface area, it can be assured that it is always in contact with the contact plate 42 and always exerts a restoring force.

[0032] Figs. 8-11 show a switch device according to another embodiment of the present disclosure. Unlike the foregoing embodiment, a spherical hinge is used in the present embodiment instead of two orthogonal shafts in the above-described embodiment, to realize pivoting support of the operation panel in any direction.

[0033] In the present embodiment, the second end of the support rod 4 has a ball head 44. A hemispherical ball seat 113 is formed at the bottom of the support slot 11 of the base body 1. The ball head 44 is accommodated in the ball seat 113 (see Figs. 9 and 10). A positioning seat 7 passes through the support rod 4 and engages with the base body 1, and has a hemispherical ball head cover on one side facing the ball head 44. The ball head 44 is enclosed in a spherical cavity formed by the ball seat 113 and the ball head cover to form a spherical hinge. The positioning seat 7 may be secured to base body 1 by snap-fitting elastic legs 71 thereon with a snap-fitting slot 114 (see Figs. 10 and 11) on the side wall of the support slot 11 of the base body 1. Through this spherical hinge, the support rod 4 may likewise slant in any direction along with the operation panel 3 without hindering the slant of the operation panel 3. At the same time, the spherical hinge also connects the operation panel 3 to the base body 1 such that it would not disengage from the base body 1.

[0034] In the present embodiment, the contact plate 42 is provided between a first end and a second end of the support rod 4, and it may be formed integrally with the support rod 4, or may be sleeved around the support rod 4 and positioned through a stopper 45 on the support rod 4. The reset mechanism 5 includes a spring 51 located in the support slot 11. The spring 51 is maintained between the positioning seat 7 and the contact plate 42, thereby applying a restoring force to the support rod 4 and the operation panel 3 through the contact plate 42. On the positioning seat 7, a spring slot 72 (see Fig. 11) may be provided to hold one end of the spring 51.

[0035] Similar to the embodiment described in Figs. 1-7, when a position of the operation panel 3 corresponding to a certain switch unit 2 is pressed, the operation panel 3 slants towards the switch unit 2 and press the button 21 of the switch unit 2. At this time, the support rod 4 slants along with the operation panel 3 to drive the contact plate 42 to slant. The slanted contact plate 42 compresses the spring 51 towards one side to accumulate the restoring force. When the user no longer presses the operation panel 3, a side of the spring 51 which is compressed more provides the restoring force to the contact plate 42 at a position in contact with the contact plate 42, to produce a moment to drive the contact plate 42

together with the support rod 4 and the operation panel 3 to rotate in a direction opposite to the slant direction, until the contact plate 42 is perpendicular to the vertical direction of the spring 51. At this time, the spring 51 does not provide a restoring force to the contact plate 42, or provides the contact plate 42 with a restoring force evenly distributed around the periphery of the support rod 4 to zero the resultant moment of the contact plate 42. As a result, the contact plate 42 will no longer rotate but be kept in a balanced position. Thus, the operation panel 3 returns to the balanced position as described previously, to facilitate the next pressing operation.

[0036] As for various embodiments of the present disclosure, a guide slot (not shown) may also be provided on the base body 1. The support rod 4 is guided through the guide slot. The guide slot is arranged to extend only along connection lines of the positions of the buttons 21 of the installed multiple switch units 2 and the center of the panel, such that when the user presses the operation panel 3, since the support rod 4 can only slant along the path of the guide slot, the operation panel 3 is guided to only slant towards the button 21 of one of the multiple switch units 2 to press the button 21. This avoids the slant of the operation panel in an incorrect slant direction of not pressing any switch unit 2 or simultaneously pressing multiple switch units 2 due to the improper pressing position on the operation panel 3, and makes the operation of the switch device more accurate and reliable. As for one (or two), three, four, six or eight switch units distributed evenly around the center of the operation panel, the guide slot is formed as a straight-line slot, triple-linear and radial slot, cross slot, six or eight linear and radial slot through an orthographic projection position of the center of the operation panel 3. Preferably, the guide slot may be formed on a cover covering the end of the support slot 11 of the base body 1.

[0037] The switch device of the various embodiments of the present disclosure provides a single switch panel 3 that can pivot and reset in various directions, such that multiple switch units can be controlled only through the single switch panel 3. The single switch panel of the switch device avoids existence of the potential gap and unevenness among the multiple switch panels. Therefore, the switch device of the present disclosure has a more pleasing appearance. Moreover, since the single switch panel can have a relatively larger operating surface, the user can position and operate the switching panel more easily. This makes the operation of the switch device of the disclosure more convenient.

[0038] It should be understood that the switch device of the present disclosure is adapted to be installed in the slots on planes such as walls and panels, for domestic, commercial or industrial places. The various switch units in the switch device can be used to respectively control the lighting circuit, power supply, electrical equipment, and so on.

Claims

1. A switch device, comprising:

a base body (1) on which multiple switch units (2) are installed;
 an operation panel (3) pivotally connected with the base body (1) via a support rod (4) such that the operation panel (3) can be operated to slant in several different directions relative to the base body (1) to respectively press each of said multiple switch units (2); and
 a reset mechanism (5) configured to drive the operation panel (3) to restore from any slant state relative to the base body (1) to a balanced state, the operation panel (3) not pressing any one of the multiple switch units (2) in this balanced state;
characterized in that a surface of the operation panel (3) which faces the base body (1) contacts a respective switch unit (2) when the operation panel (3) is slanted.

2. The switch device according to claim 1, wherein a first end of the support rod (4) is fixed to a center of the operation panel (3), and a second end of the support rod (4) extends into a support slot (11) at the center of the base body (1), and the support rod (4) is rotatably supported in the support slot (11) such that the support rod (4) can swing along with the slant motion of the operation panel (3).

3. The switch device according to claim 2, wherein a first shaft (6) is pivotally supported on the base body (1), a through slot (61) is provided on the first shaft (6) in an axial direction of the first shaft (6), the support rod (4) passes through the through slot (61) and is pivotally supported on the first shaft (6) via a second shaft (41) on the support rod (4), and an axial direction of the first shaft (6) is perpendicular to an axial direction of the second shaft (41).

4. The switch device according to claim 3, wherein the reset mechanism (5) includes a spring (51) and a reset pad (52) located in the support slot (11) and has a contact plate (42) on the second end of the support rod (4); and wherein the spring (51) forces the reset pad (52) to abut against the contact plate (42), and the reset pad (52) is movably guided in the support slot (11) in a direction perpendicular to a plane of the operation panel (3) in the balanced state.

5. The switch device according to claim 4, wherein a periphery of the contact plate (42) is circular, and on a side of the contact plate in contact with the reset pad (52) a boss (421) is provided on the circular periphery of the contact plate to contact the reset pad

(52).

6. The switch device according to claim 3, wherein the reset mechanism (5) includes a leaf spring (51) located in the support slot (11) and has a contact plate (42) at the second end of the support rod (4); and the leaf spring (51) abuts against the contact plate (42).

7. The switch device according to claim 2, wherein the second end of the support rod (4) has a ball head (44) which is positioned on the base body (1) by a positioning seat (7) to form a spherical hinge.

8. The switch device according to claim 7, wherein a contact plate (42) is arranged between the first end and second end of the support rod (4), the reset mechanism (5) comprises a spring (51) located in the support slot (11), and the spring (51) is held between the positioning seat (7) and the contact plate (42).

9. The switch device according to any of claims 1-8, wherein a guide slot is provided on the base body (1), and the support rod (4) is guided by the guide slot.

10. The switch device according to any of claims 1-9, wherein at least two switch units (2) are distributed asymmetrically relative to a center of the operation panel (3).

Patentansprüche

1. Schaltervorrichtung, umfassend:

einen Grundkörper (1), auf dem mehrere Schaltereinheiten (2) installiert sind;
 ein Bedienfeld (3), das über eine Stützstange (4) schwenkbar mit dem Grundkörper (1) so verbunden ist, dass das Bedienfeld (3) in Bezug auf den Grundkörper (1) in mehrere verschiedene Richtungen geneigt betrieben werden kann, um jeweils jede der mehreren Schaltereinheiten (2) zu drücken; und
 einen Rückstellmechanismus (5), der konfiguriert ist, um das Bedienfeld (3) so anzutreiben, dass es aus einem beliebigen geneigten Zustand in Bezug auf den Grundkörper (1) in einen ausgeglichenen Zustand zurückkehrt, wobei das Bedienfeld (3) in diesem ausgeglichenen Zustand keine der mehreren Schaltereinheiten (2) drückt;

dadurch gekennzeichnet, dass eine dem Grundkörper (1) zugewandte Oberfläche des Bedienfeldes (3) eine entsprechende Schaltereinheit (2) kontaktiert, wenn das Bedienfeld (3) geneigt ist.

2. Schaltervorrichtung nach Anspruch 1, wobei ein erstes Ende der Stützstange (4) an einer Mitte des Bedienfeldes (3) befestigt ist und sich ein zweites Ende der Stützstange (4) in einen Stützschlitz (11) in der Mitte des Grundkörpers (1) hinein erstreckt, und die Stützstange (4) in dem Stützschlitz (11) drehbar gelagert ist, so dass die Stützstange (4) mit der Neigungsbewegung des Bedienfeldes (3) mitschwingen kann. 5
3. Schaltervorrichtung nach Anspruch 2, wobei eine erste Welle (6) schwenkbar am Grundkörper (1) abgestützt ist, ein Durchgangsschlitz (61) an der ersten Welle (6) in Axialrichtung der ersten Welle (6) bereitgestellt ist, die Stützstange (4) den Durchgangsschlitz (61) hindurchgeht und über eine zweite Welle (41) an der Stützstange (4) an der ersten Welle (6) schwenkbar abgestützt ist und eine Axialrichtung der ersten Welle (6) rechtwinklig zu einer Axialrichtung der zweiten Welle (41) ist. 10
4. Schaltervorrichtung nach Anspruch 3, wobei der Rückstellmechanismus (5) eine Feder (51) und ein Rückstellpolster (52) beinhaltet, die sich im Stützschlitz (11) befinden, und eine Kontaktplatte (42) am zweiten Ende der Stützstange (4) aufweist; und wobei die Feder (51) das Rückstellpolster (52) zum Anliegen an der Kontaktplatte (42) zwingt, und das Rückstellpolster (52) im Stützschlitz (11) in einer Richtung rechtwinklig zu einer Ebene des Bedienfeldes (3) im ausgeglichenen Zustand beweglich geführt ist. 15
5. Schaltervorrichtung nach Anspruch 4, wobei ein Umfang der Kontaktplatte (42) kreisförmig ist und auf einer Seite der Kontaktplatte in Kontakt mit dem Rückstellpolster (52) ein Ansatz (421) am kreisförmigen Umfang der Kontaktplatte bereitgestellt ist, um das Rückstellpolster (52) zu kontaktieren. 20
6. Schaltervorrichtung nach Anspruch 3, wobei der Rückstellmechanismus (5) eine im Stützschlitz (11) angeordnete Blattfeder (51) beinhaltet und am zweiten Ende der Stützstange (4) eine Kontaktplatte (42) aufweist; und die Blattfeder (51) an der Kontaktplatte (42) anliegt. 25
7. Schaltervorrichtung nach Anspruch 2, wobei das zweite Ende der Stützstange (4) einen Kugelkopf (44) aufweist, der über einen Positioniersitz (7) auf dem Grundkörper (1) zur Bildung eines Kugelgelenks positioniert ist. 30
8. Schaltervorrichtung nach Anspruch 7, wobei zwischen dem ersten Ende und dem zweiten Ende der Stützstange (4) eine Kontaktplatte (42) angeordnet ist, der Rückstellmechanismus (5) eine im Stützschlitz (11) angeordnete Feder (51) umfasst und die 35

Feder (51) zwischen dem Positioniersitz (7) und der Kontaktplatte (42) gehalten wird.

9. Schaltervorrichtung nach einem der Ansprüche 1-8, wobei auf dem Grundkörper (1) ein Führungsschlitz bereitgestellt ist und die Stützstange (4) durch den Führungsschlitz geführt ist. 40
10. Schaltervorrichtung nach einem der Ansprüche 1-9, wobei mindestens zwei Schaltereinheiten (2) asymmetrisch zu einer Mitte des Bedienfeldes (3) verteilt sind. 45

15 Revendications

1. Dispositif de commutation, comprenant : 50

un corps de base (1) sur lequel sont installées de multiples unités de commutation (2) ;
 un panneau de commande (3) connecté avec faculté de pivotement au corps de base (1) via une tige de support (4) de sorte que le panneau de commande (3) peut être commandé de manière à s'incliner dans plusieurs directions différentes par rapport au corps de base (1) pour respectivement appuyer sur chacune desdites multiples unités de commutation (2) ; et
 un mécanisme de réinitialisation (5) configuré pour amener le panneau de commande (3) à revenir depuis un état incliné quelconque relativement au corps de base (1) vers un état équilibré, le panneau de commande (3) n'appuyant sur aucune des multiples unités de commutation (2) dans cet état équilibré ;
caractérisé en ce qu'une surface du panneau de commande (3) qui fait face au corps de base (1) vient en contact avec une unité de commutation respective (2) quand le panneau de commande (3) est incliné. 55

2. Dispositif de commutation selon la revendication 1, dans lequel une première extrémité de la tige de support (4) est fixée à un centre du panneau de commande (3), et une deuxième extrémité de la tige de support (4) s'étend jusqu'à une fente de support (11) au niveau du centre du corps de base (1), et la tige de support (4) est supportée en rotation dans la fente de support (11) de sorte que la tige de support (4) peut pivoter conjointement avec le déplacement incliné du panneau de commande (3). 60
3. Dispositif de commutation selon la revendication 2, dans lequel un premier axe (6) est supporté avec faculté de pivotement sur le corps de base (1), une fente traversante (61) est prévue sur le premier axe (6) dans une direction axiale du premier axe (6), la tige de support (4) passe à travers la fente traversante 65

sante (61) et est supportée avec faculté de pivotement sur le premier axe (6) via un deuxième axe (41) sur la tige de support (4), et une direction axiale du premier axe (6) est perpendiculaire à une direction axiale du deuxième axe (41).

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unités de commutation (2) sont distribuées de manière asymétrique relativement à un centre du panneau de commande (3).

4. Dispositif de commutation selon la revendication 3, dans lequel le mécanisme de réinitialisation (5) inclut un ressort (51) et un coussinet de réinitialisation (52) situés dans la fente de support (11) et a une plaque de contact (42) sur la deuxième extrémité de la tige de support (4) ; et dans lequel le ressort (51) force le coussinet de réinitialisation (52) à venir en butée contre la plaque de contact (42), et le coussinet de réinitialisation (52) est guidé de manière déplaçable dans la fente de support (11) dans une direction perpendiculaire à un plan du panneau de commande (3) dans l'état équilibré.

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5. Dispositif de commutation selon la revendication 4, dans lequel une périphérie de la plaque de contact (42) est circulaire, et, sur un côté de la plaque de contact en contact avec le coussinet de réinitialisation (52), il est prévu un bossage (421) sur la périphérie circulaire de la plaque de contact pour venir en contact avec le coussinet de réinitialisation (52).

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6. Dispositif de commutation selon la revendication 3, dans lequel le mécanisme de réinitialisation (5) inclut un ressort à lame (51), situé dans la fente de support (11) et a une plaque de contact (42) au niveau de la deuxième extrémité de la tige de support (4) ; et le ressort à lame (51) vient en butée contre la plaque de contact (42).

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7. Dispositif de commutation selon la revendication 2, dans lequel la deuxième extrémité de la tige de support (4) a une tête sphérique (44) qui est positionnée sur le corps de base (1) par un siège de positionnement (7) pour former une charnière sphérique.

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8. Dispositif de commutation selon la revendication 7, dans lequel une plaque de contact (42) est agencée entre la première extrémité et la deuxième extrémité de la tige de support (4), le mécanisme de réinitialisation (5) comprend un ressort (51) situé dans la fente de support (11), et le ressort (51) est maintenu entre le siège de positionnement (7) et la plaque de contact (42).

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9. Dispositif de commutation selon l'une quelconque des revendications 1 à 8, dans lequel une fente de guidage est prévue sur le corps de base (1), et la tige de support (4) est guidée par la fente de guidage.

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10. Dispositif de commutation selon l'une quelconque des revendications 1 à 9, dans lequel au moins deux

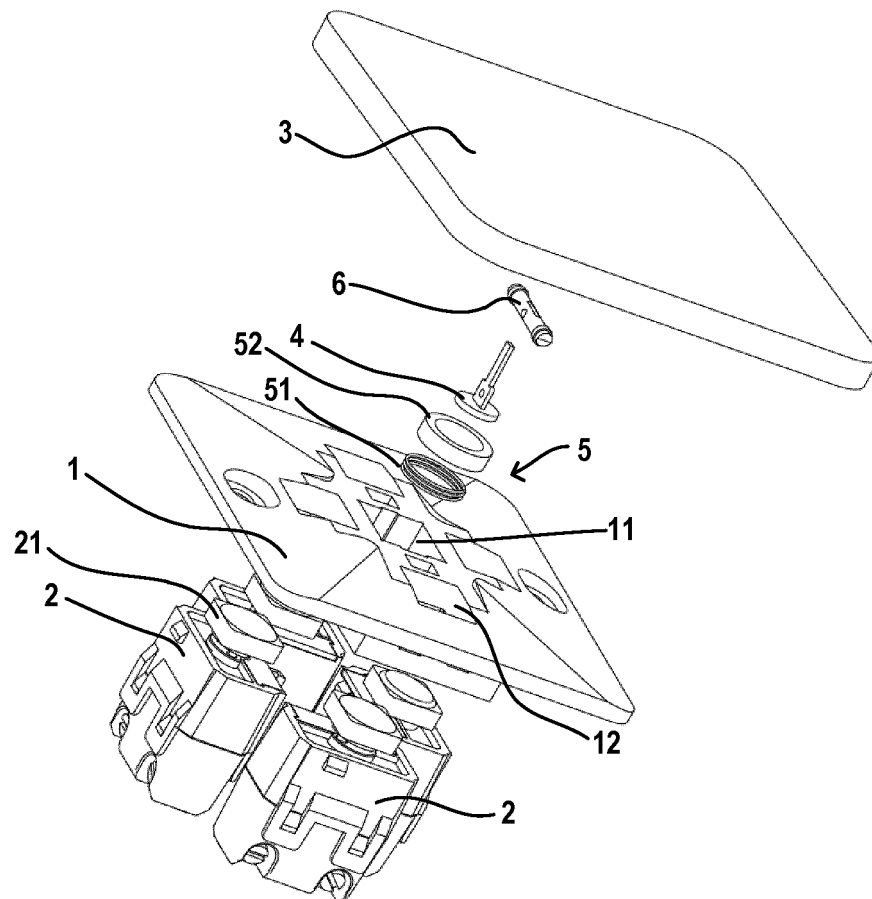


Fig.1

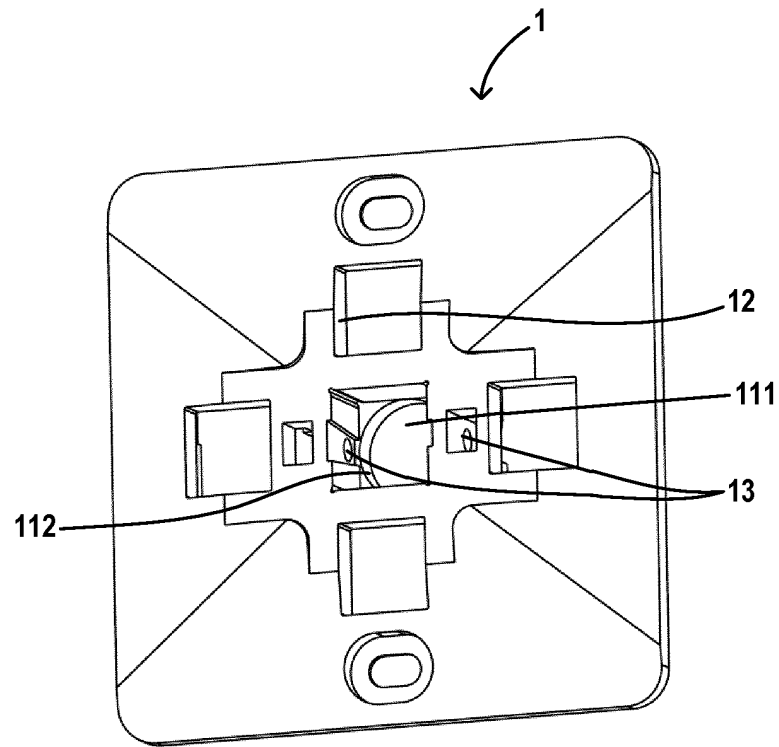


Fig.2

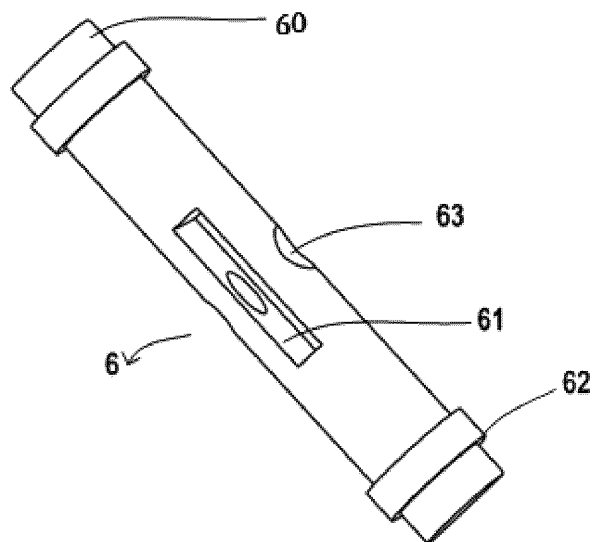


Fig.3

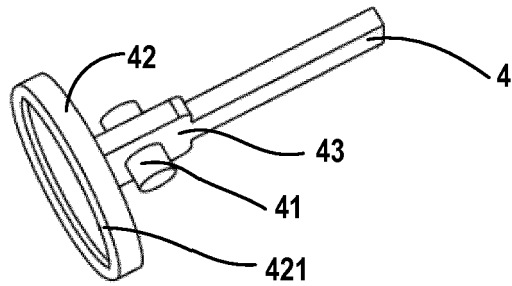


Fig.4

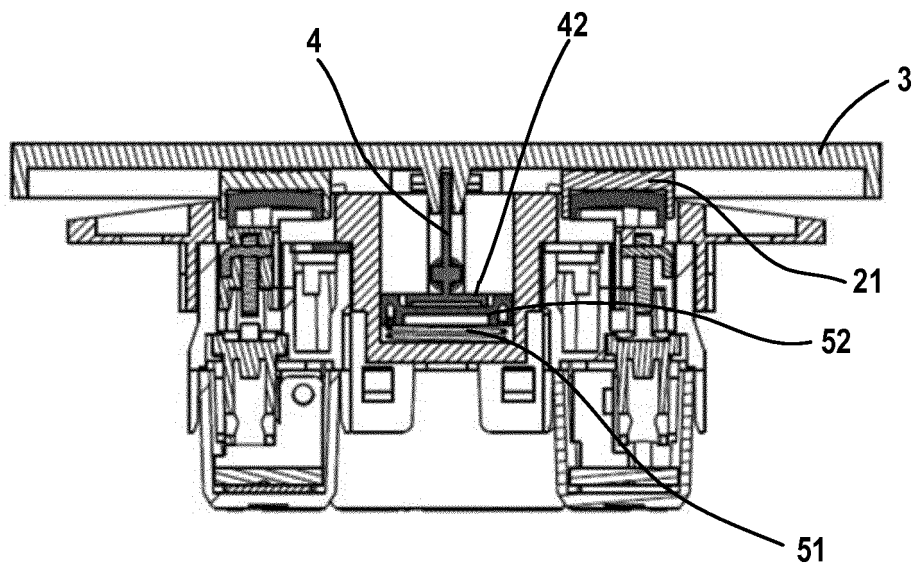


Fig.5

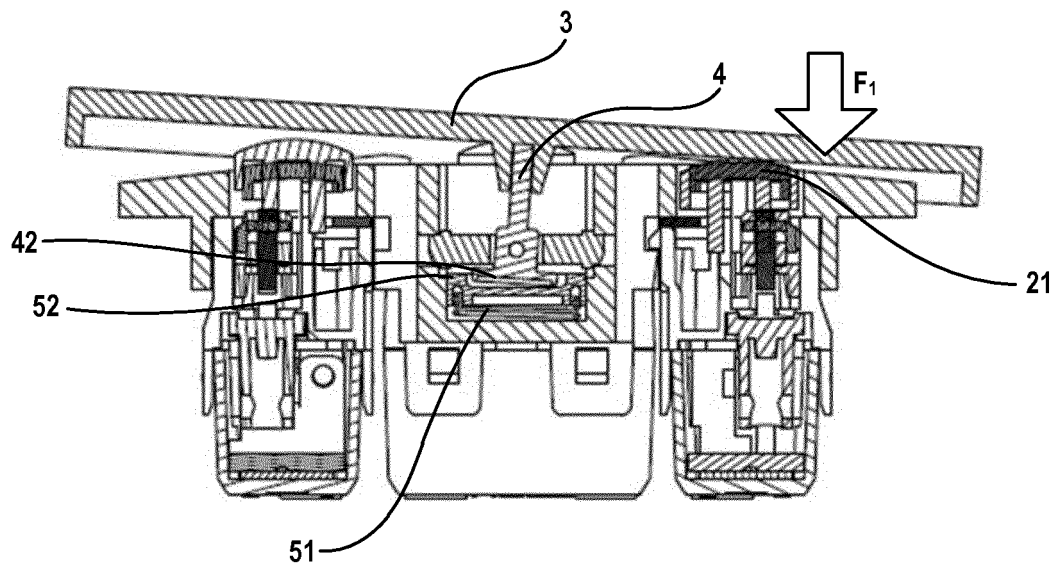


Fig.6

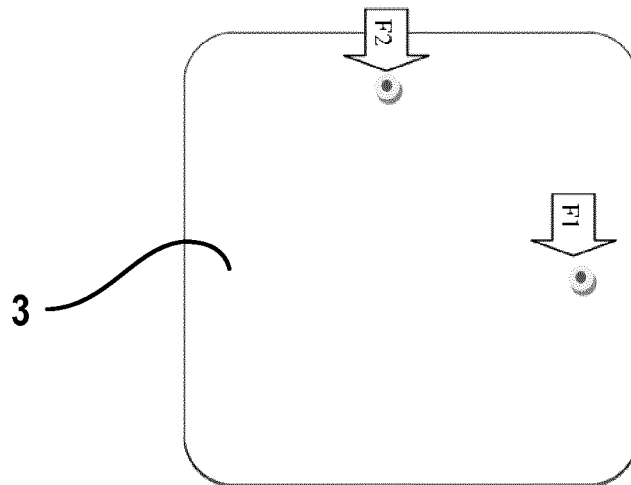


Fig.7

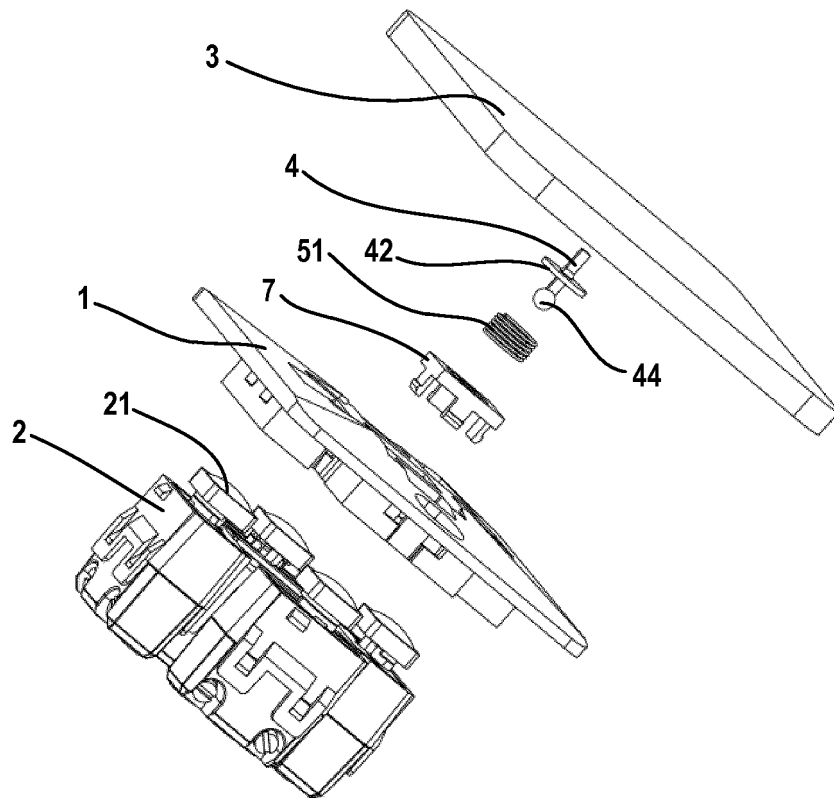


Fig.8

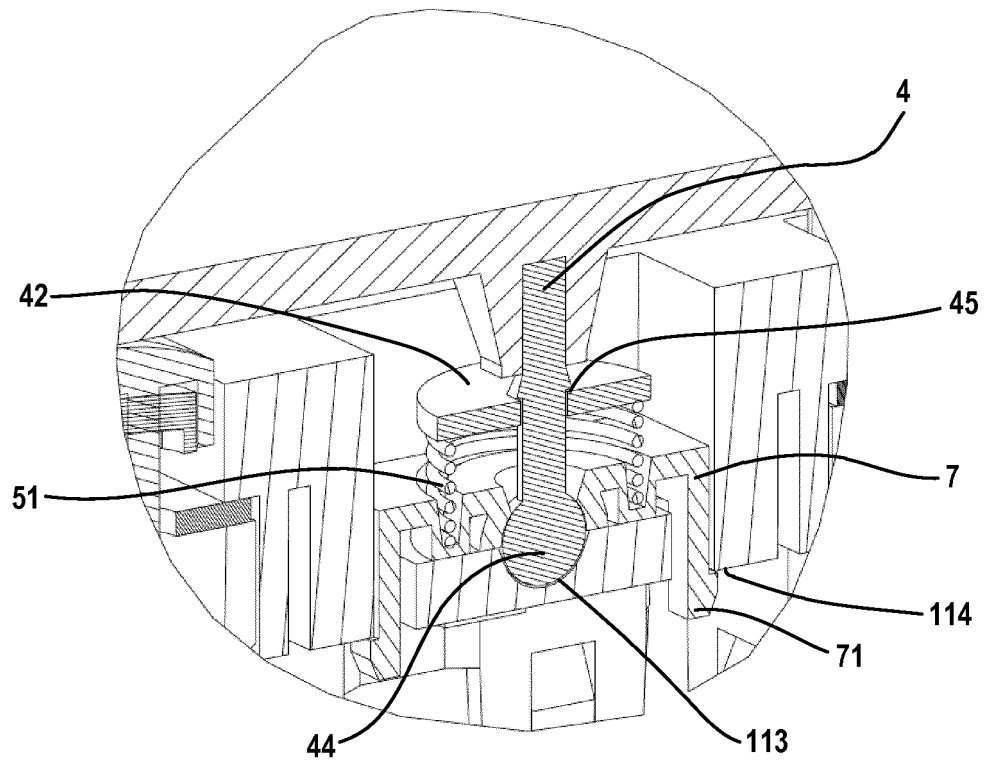


Fig.9

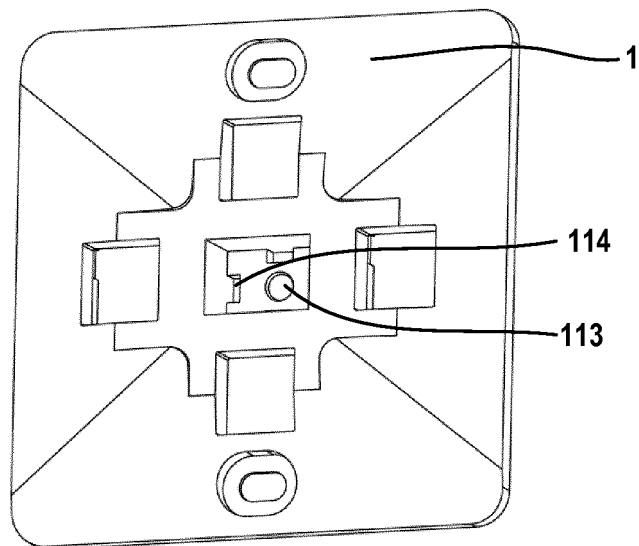


Fig.10

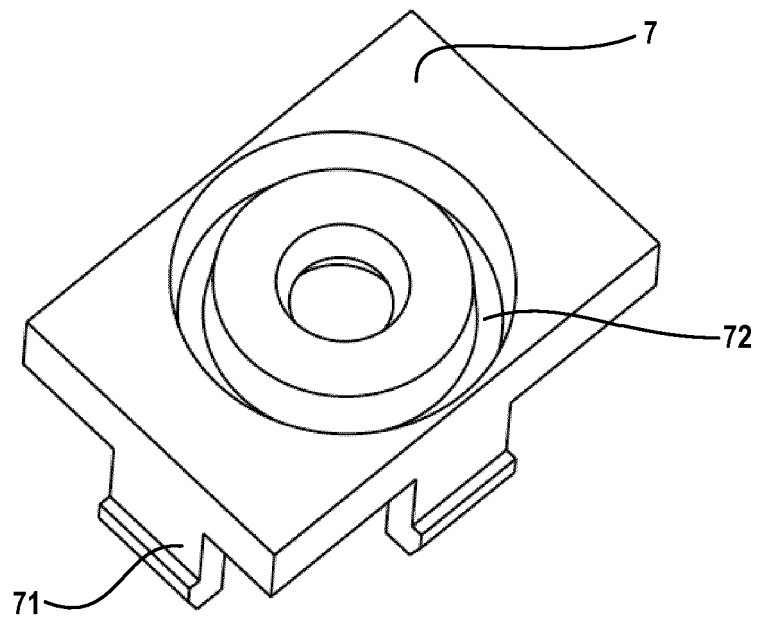


Fig.11

REFERENCES CITED IN THE DESCRIPTION

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