

SWITCH

FIELD OF THE INVENTION

[0001] Embodiments of the present disclosure generally relate to a switch, and particularly to a switch with a simple structure.

BACKGROUND OF THE INVENTION

[0002] An intermediate switch may generally be connected to a double control switch, for performing multi-position control to the electronic device. The intermediate switch in the prior art generally consists of a housing, a base, an operating panel, two inlet terminals, two outlet terminals, and two silver bridges. The silver bridges are generally set on the inlet terminals; a connection sheet is provided on the outlet terminal; contacts are provided on the connection sheet to be in contact with the silver bridge. By pressing the operating panel, two silver bridges are driven to sway, so as to cause the silver bridge to contact the contact on the connection sheet or disengage therefrom, thereby realizing on/off of a circuit. However, this traditional intermediate switch has the following drawbacks. Because two silver bridges of the intermediate switch sway in a same direction, in order to switch a current loop, the connection sheet at the load side has to be made especially complex. On one hand, the complex structure of the connection sheet has a large difficulty in shaping, and a plurality of molds is needed, which increases the manufacture cost of the connection sheet. On the other hand, because the connection sheet has a complex structure, a position of the connection sheet should be particularly noted, which causes an assembly work time-consuming and laborious. there is a need to improve the structure of an intermediate switch in the prior art, so as to reduce the manufacture cost.

SUMMARY OF THE INVENTION

[0003] In view of the above problems, one of the objectives of the present disclosure is to provide a switch that is simple in structure and easy to manufacture.

[0004] According to one aspect of the present disclosure, there is provided a switch comprising a longitudinal axis, the switch comprising a manipulating part configured to be rotatable within a plane perpendicular to the longitudinal axis; and a bridging piece driven by the manipulating part and configured to rotate within a plane parallel to the longitudinal axis upon rotation of the manipulating part, so as to connect or disconnect an inlet terminal of the switch to/from a corresponding outlet terminal via the bridging piece.

[0005] According to an embodiment of the present disclosure, the manipulating part comprises an operation piece and a driving piece arranged in succession along the longitudinal axis, the operation piece being pivotably mounted and configured to rotate in response to a pressing operation, the driving piece being pivotably mounted and configured to drive the driving piece to rotate around the longitudinal axis within the plane perpendicular to the longitudinal axis upon rotation of the operation piece.

[0006] According to an embodiment of the present disclosure, the manipulating part comprises a rotating knob and a driving piece as integral or separate members arranged along the longitudinal axis, the driving piece being configured to rotate about the longitudinal axis within the plane perpendicular to the longitudinal axis in response to rotation of the rotating knob.

[0007] According to an embodiment of the present disclosure, the operation piece includes a push part extending along a longitudinal axis direction; the driving piece comprises an abutting part mated with the push part, the push part and the abutting part being configured to interact with each other to drive the driving piece to rotate.

[0008] According to an embodiment of the present disclosure, the drive part has a push surface; and the abutting part comprises a convex surface adapted to abut the corresponding push surface upon rotation of the operation piece.

[0009] According to an embodiment of the present disclosure, the push part and the abutting part are provided eccentrically relative to the longitudinal axis.

[0010] According to an embodiment of the present disclosure, the driving piece further comprises a force applying member adapted to apply force to a corresponding bridging piece.

[0011] According to an embodiment of the present disclosure, the force applying member is a spring; the driving piece comprises a receiving cavity in which the spring is disposed; one end of the spring abuts against a bottom surface of the receiving cavity, while the other end of the spring engages the bridging piece.

[0012] According to an embodiment of the present disclosure, the bridging piece comprises an engagement part engaged with the force applying member, the engagement part being a polygonal convex part, the force applying member being provided on the convex part.

[0013] According to an embodiment of the present disclosure, the receiving cavity comprises a notch adapted to provide a moving path to the bridging piece.

[0014] According to an embodiment of the present disclosure, the inlet terminal and/or the outlet terminal comprises a V-shaped concave part, the bridging piece further comprises a V-shaped convex part mated with the V-shaped concave part.

[0015] According to an embodiment of the present disclosure, the force applying member is a driving arm an end of which abuts the bridging piece.

[0016] According to an embodiment of the present disclosure, the inlet terminal and/or the outlet terminal comprises a convex-shaped surface so as to drive the bridging piece to sway along the convex surface in response to rotation of the driving piece so as to establish a connection between the inlet terminal and a corresponding outlet terminal via the bridging piece.

[0017] According to an embodiment of the present disclosure, the switch further comprises a housing and a base as integral or separate members arranged along the longitudinal axis, the base is provided with an opening extending along the longitudinal axis direction, a pivotal shaft of the driving piece comprising a claw part; through cooperation between the claw part and the opening, the driving piece is mounted to the base; and the operation piece is fitted to the housing via an axial hole.

[0018] According to an embodiment of the present disclosure, the switch is an intermediate switch; and there are two bridging pieces that are configured to cause the two bridging pieces to sway in opposite directions upon rotation of the driving piece.

[0019] The switch according to the embodiments of the present disclosure has a simple structure and its manufacturing process is simple, such that it saves assemble time and can effectively enhance the work efficiency and reduce the production cost.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

[0020] Hereinafter, the embodiments of the present disclosure will be described with

reference to the accompanying drawings only through examples, wherein:

[0021] Fig. 1 shows an overall diagram of an intermediate switch according to an exemplary embodiment of the present disclosure;

[0022] Fig. 2 shows a schematic exploded stereoscopic diagram of the intermediate switch illustrated in Fig. 1;

[0023] Fig. 3 shows a schematic cross-section view of the intermediate switch of Fig. 1 along an up-to-down direction (i.e., the longitudinal axial direction) in the figure;

[0024] Fig. 4 shows a schematic diagram of an operation piece according to an exemplary embodiment of the present disclosure;

[0025] Fig. 5a and Fig. 5b show a schematic diagram of a driving piece according to an exemplary embodiment of the present disclosure;

[0026] Fig. 6 shows a schematic diagram of a silver bridge according to an exemplary embodiment of the present disclosure;

[0027] Fig. 7 shows a schematic diagram of a first operation state of the intermediate switch as shown in Fig. 1, wherein the housing is removed in order to facilitate observation;

[0028] Fig. 8 shows a schematic diagram of a second operation state of the intermediate switch as shown in Fig. 1, wherein the housing is removed in order to facilitate observation;

[0029] Figs. 9a and 9b show schematic diagrams of a driving piece and a silver bridge according to another embodiment of the present disclosure and their cross-section views;

[0030] Fig. 10 shows a schematic diagram of a switch according to a further embodiment of the present disclosure; and

[0031] Fig. 11 shows a schematic diagram of a switch according to a still further embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0032] Now, the embodiments of the present disclosure will be specifically described with reference to the accompanying drawings. It should be noted that similar components or functions in the drawings may be denoted with the same reference numerals. The drawings are only intended to illustrate the embodiments of the present disclosure. Those skilled in the art may obtain alternative technical solutions from the following description without departing from the spirit and protection scope of the present disclosure.

[0033] One aspect of the present disclosure provides a switch comprising a longitudinal axis, the switch comprising a manipulating part configured to be rotatable within a plane perpendicular to the longitudinal axis; and a bridging piece driven by the manipulating part and configured to rotate within a plane parallel to the longitudinal axis upon rotation of the manipulating part, so as to connect or disconnect an inlet terminal of the switch to/from a corresponding outlet terminal via the bridging piece. An inventive concept of the present invention is change the movement manner of the silver bridges in the prior art, thereby simplifying the silver bridge structure and reducing the manufacture cost. It should be understood that the term "longitudinal axis" is not necessarily a length direction of the switch, and here it refers to the mount direction of the switch. The term "bridging piece" is a swaying piece for a switch so as to set up a connection between an inlet terminal and a corresponding outlet terminal or disconnect them, e.g., it may be a silver bridge or other electrical connection component. Its material is not necessarily silver, but may be copper, aluminum, or other

electrically conductive material.

[0034] It should be understood that in the description below, although the intermediate switch is taken as an example for illustration, it is only exemplary, not limitative. When the number of inlet terminals, outlet terminals, and silver bridges is two, the switch may be made into an intermediate switch. In other embodiments, for example, if the number of inlet terminal is one, the number of outlet terminals is two, while the number of silver bridges is correspondingly changed to one, it may be easy to implement the inventive concept as illustrated to the intermediate switch in the following embodiment of the present disclosure in a normal switch. It should be understood that the inventive idea of the present invention is not limited to the intermediate switch, but may cover various switches that are currently used or future possibly developed and can be applied to the idea of the present invention.

[0035] Hereinafter, the switch according to the embodiment of the present disclosure will be illustrated in detail with reference to the accompanying drawings.

[0036] Figs. 1-8 illustrate structures of an intermediate switch according to an exemplary embodiment of the present disclosure. Fig. 1 shows an overall diagram of an intermediate switch according to an exemplary embodiment of the present disclosure. Fig. 2 shows a schematic exploded stereoscopic diagram of the intermediate switch illustrated in Fig. 1. Fig. 3 shows a schematic cross-section view of the intermediate switch of Fig. 1 along an up-to-down direction (i.e., the longitudinal axial direction) in the figure. Fig. 4 shows a schematic diagram of an operation piece. Fig. 5a and Fig. 5b show a schematic diagram of a driving piece. Fig. 6 shows a schematic diagram of a silver bridge. Fig. 7 shows a schematic diagram of a first operation state of the intermediate switch as shown in Fig. 1. Fig. 8 shows a schematic diagram of a second operation state of the intermediate switch as shown in Fig. 1.

[0037] As shown in Figs. 1-8, the switch comprises a housing 1, a base 2, an inlet terminal 3, an outlet terminal 4, a silver bridge 7 (bridging piece), a driving piece 6, and an operating piece 5. For an intermediate switch, the inlet terminal 3 and the outlet terminal 4 may be a pair, respectively. The inlet terminal 3 and the outlet terminal 4 are received in the base 2 (specifically see Fig. 3); a contact is provided on the inlet terminal 3 and the outlet terminal 4, respectively, and a binding post (not shown) may also be provided thereon. In the embodiments in the figures (particularly Fig. 2), the inlet terminal 3 is connected to a corresponding silver bridge 7, respectively. An electrically conductive sheet (or connection sheet) is provided on the outlet terminal 4. A pair of contacts is provided on the connection sheet. By controlling movement of the pair of silver bridges 7, the contact of the silver bridge 7 is in contact with the contact on the connection sheet or disconnected therefrom, respectively, so as to perform on/off of the switch. Because the inlet terminal, outlet terminal, base, and the on/off switch principles of the switch are all known to those skilled in the art. Therefore, detailed description thereof is omitted, while components closely related to the present invention are focused. It should also be understood that the switch structure as shown in the figure is only exemplary, and the inlet terminal 3, outlet terminal 4, and the base 2 may be implemented as various other structures common in the field.

[0038] As shown in the exploded view of Fig. 2, the housing 1, base 2, inlet terminal 3, outlet terminal 4, silver bridge 7, driving piece 6, and operation piece 5 are arranged substantially in a longitudinal direction of a switch and mounted longitudinally to form the switch. In the embodiment, the driving piece 6 and the operating piece 5 form a manipulating part of the present application. Because the manipulating part consists of two members, the structure of the

manipulating part is designed more flexibly, e.g., the operation piece may be formed in the form of a panel, which facilitates reduction of the space occupied by the switch and enhances the flexibility of manipulation. The longitudinal direction of the switch is a mount direction of respective components of the switch, which is an up-down direction of the paper surface in the diagram shown in Fig. 2. Of course, in a specific application, it might not be an up-down direction. Fig. 1 shows an overall schematic diagram of the switch.

[0039] As shown in the figure, the operation piece 5 may be pivotally mounted to the housing 1; the operation piece 5 is configured to be rotatable under an action of an operation force along a longitudinal axis. In an exemplary embodiment, as shown in Fig. 4, the operation piece 5 comprises a pivotal shaft 52, the pivotal shaft 52 being mounted in a corresponding hole of the housing 1; when pressing the operation piece 5, the operation piece 5 rotates about the pivotal shaft 52. The housing 1 for example may be provided with other structures, e.g., a stop of the operation piece 5, etc. Because these are not inventive points of the present invention, detailed illustration thereof may be omitted.

[0040] The driving piece 6 is pivotally mounted to the base 2; the driving piece 6 is configured to drive the driving piece 6 upon rotation of the operation piece 5 to rotate within a plane perpendicular to the longitudinal axis (in the figure shown in Fig. 2, within a horizontal plane).

[0041] The silver bridge 7 is configured to drive the silver bridge 7 to rotate in a plane (as shown in Fig. 2, in a perpendicular plane) parallel to the longitudinal axis via the driving piece 6 so as to set up a connection between the inlet terminal 3 and the corresponding outlet terminal 4 via the silver bridge 7.

[0042] According to an embodiment of the present disclosure, the operation piece 5 further comprises a push part 51 extending along a longitudinal axis direction (see Fig. 4), the driving piece 6 comprises an abutting part 61 mated with the push part (see Fig. 5); the push part 51 and the abutting part 61 are configured to interact with each other so as to drive the driving piece 6 to rotate about a longitudinal axis within a plane perpendicular to the longitudinal axis.

[0043] According to an embodiment of the present disclosure, the push part 51 is provided a push surface; the abutting part 61 comprises a convex surface 61 adapted to abut against the corresponding push surface upon rotation of the operation piece 5. In one embodiment, the push surface, for example, is a plane, while in other embodiments it may also be a surface of other shape. Similarly, the convex surface 61 for example may be a hemispheric surface or a surface of other shape. Such drive member is structurally relatively simple, and can effectively reduce the manufacture cost.

[0044] According to an embodiment of the present disclosure, the push part 51 and the protrusion part 61 are eccentrically disposed relative to the longitudinal axis. Such structure has an advantage of facilitating drive. When the operation piece 5 rotates about the pivotal shaft 52, the push part 51 may push the protrusion part 61 with a small force.

[0045] According to an embodiment of the present disclosure, the drive part 6 further comprises a force applying part 63 adapted to apply a torque to a corresponding silver bridge 7. In one embodiment, the force applying part 63 is a spring. The driving piece 6 comprises a receiving cavity 64 in which the spring 63 is disposed. One end of the spring abuts a bottom wall surface of the receiving cavity, while the other end of the spring 63 is engaged with the silver bridge 7.

[0046] In one embodiment, the silver bridge 7 comprises an engagement part 71 engaged with

the force applying part 63 (see Fig. 6). The engagement part 71 is configured to make the force applying part 63 not rotate relative to the receiving cavity 64 and the engagement part 71 when the driving part 6 drives the silver bridge 7 to rotate. In one embodiment, the engagement part 71 is a convex part with a polygonal cross section, and the force applying part 63 is provided on the convex part. The polygonal cross-section is of, for example, a trapezoid, triangle, or other shape. Because the spring 63 does not rotate relative to the engagement part 71, it can effectively utilize the torque of the spring to drive the silver bridge 7 to rotate.

[0047] In the embodiment as shown in the figure, the inlet terminal 3 comprises a V-shaped recessed part; the silver bridge 7 further comprises a V-shaped convex part 72 mated with the V-shaped recessed part.

[0048] In the embodiment as shown in the figure, the receiving cavity comprises a notch 65 providing a movement path for the silver bridge 7. In another embodiment, the notch 65 may also act as a force applying part. For example, two side edges of the silver bridge 7 may abut a side edge of the notch 65. When the driving piece 6 rotates, one side edge of the silver bridge 7 is located at one side of the notch 65. The driving piece 6 applies an acting force to the silver bridge 7, thereby pushing the silver bridge 7 to rotate. In this case, the spring as a force applying part may be omitted. The size of the notch may be adjusted as required, e.g., when the size of the notch is relatively large, it may play a role of receiving the silver bridge 7 to provide a movement path; while when the size of the notch is slightly small, the notch may play a role of a force applying part.

[0049] Hereinafter, an operation manner of a switch according to the embodiments of the present disclosure will be illustrated in conjunction with Figs. 7 and 8. As shown in Fig. 7, when a downward acting force is applied to the operation piece 5 (as shown by the upper arrow on the paper surface of Fig. 7), the operation piece 5 rotates about the pivotal shaft 52; the push part 51 on the operation piece 5 applies an acting force to the protrusion part 61 on the driving piece 6, causing the driving piece 6 to rotate within a horizontal plane in a direction indicated by the arrow shown in Fig. 7. Because the receiving cavity 64 of the driving piece 6 receives therein a spring 63 that is provided on the engagement part 71 of the silver bridge 7; therefore, during rotation of the driving piece 6 within a horizontal plane, the driving piece 6 applies torque to the spring 63. The torque of the spring 63 further applies force to the silver bridge 7, and drives the silver bridge to rotate within the vertical plane. The silver bridge 7 forms an axial hole connection by engaging the V-shaped convex part 72 to the V-shaped recessed part of the inlet terminal, and the silver bridge 7 rotates under the action of applying force, such that the contact of the silver bridge contacts the contact on the connection sheet or disconnect from the contact on the connection sheet. In the embodiment as shown in the figure, a pair of silver bridges 7 is disposed at two sides of the driving piece 6 respectively. During rotation of the driving piece 6, a pair of silver bridges 7 move along a reverse direction, thereby realizing connection or disconnection of corresponding contacts.

[0050] Fig. 8 shows another operation state of the switch. When a pressing force acts on the operation piece 5, the movement principle of the driving piece 6 and the silver bridge 7 is identical to Fig. 7. For the sake of simplicity, its detailed description will be omitted.

[0051] According to an embodiment of the present invention, for example, see Fig. 3, the base 2 is provided with an opening extending along a longitudinal axis direction. The pivotal shaft of the driving piece 6 comprises a claw part. Through cooperation between the claw part and the

opening, the driving piece 6 is mounted to the base 2. Such structure is relatively simple. Pivotal movement between the driving piece and the base is implemented in a simple manner.

[0052] In an embodiment of the present disclosure, a pair of silver bridges sways in opposite directions. The structure of the connecting piece is manufactured very simple, not complex as the prior art. The number of molds for molding connecting pieces is reduced, and the production process is simple. The switch of the embodiments of the present disclosure is easy to assemble, which saves the assemble time, can significantly improve work efficiency, reduces the product cost, and the integral structure is concise and beautiful.

[0053] Although in the switch in the embodiments shown in the figure, the silver bridges are a pair, and the switch is implemented as an intermediate switch. The switch can also be implemented as a normal switch. For example, only one silver bridge, one inlet terminal, and a pair of outlet terminals may be provided. The swaying of the silver bridge may be controlled to perform on/off of the switch. Such variation is obvious to a person of normal skill in the art. Therefore, the present invention also covers such variation.

[0054] According to another embodiment of the present disclosure, the force applying part may be implemented as other forms. Based on the movement principle of the switch according to the present disclosure, the force applying part may be implemented into various forms. Figs. 9a and 9b show another exemplary configuration of a force applying part, a silver bridge, and an inlet terminal (only a portion is illustrated) of the switch according to the present disclosure. The apparatus as shown in Fig. 9 may be used to replace the force applying part 6 and the silver bridge 7 in the previous embodiments, which may likewise implement the concept of the present invention.

[0055] In the embodiment as shown in Fig. 9a and Fig. 9b, the force applying part is a driving arm 63'. The driving arm, for example, is a rod-shaped piece. The driving arm may be, for example, inserted into a receiving cavity of the driving piece 6. In one embodiment, the driving arm may be engaged with an elastic member, e.g., a spring. In another embodiment, the driving arm may be integrated with the driving piece. Different from the embodiment shown in Fig. 2, the silver bridge 7' is of a sheet shape substantially extending in the horizontal direction. The driving arm 63' may directly abut a side surface of the silver bridge 7'. In this structure, when the driving arm 63' rotates under the drive of the driving piece, the driving arm 63' applies an action force to the silver bridge 7', further driving the silver bridge 7' to rotate.

[0056] In one embodiment, in order to facilitate the silver bridge to sway, the inlet terminal is formed into a convex surface 32'. An end part of the driving arm 63' abuts the silver bridge 7' so as to drive the silver bridge 7' to move along the convex surface 32' upon rotation of the driving piece so as to set up a connection between the inlet terminal and the corresponding outlet terminal via the silver bridge 7'.

[0057] Similarly, the driving piece structure having a driving arm and the corresponding silver bridge may be utilized to implement a purpose similar to the embodiments.

[0058] Fig. 10 shows a schematic diagram of a switch according to a further embodiment of the present disclosure. The embodiment is substantially identical to the embodiments as shown in Figs. 1-8. For the sake of simplicity, only the differences are focused. In the embodiment shown in Fig. 1, the base 1 and the housing 2 are separate components, while in the embodiment shown in Fig. 10, the base and the housing are an integral component 1' (2'), and the manipulating part (operation piece 5 and driving piece 6), silver bridge 7, inlet terminal 3, and outlet terminal are

substantially identical to the embodiment shown in Fig. 1. These components are mounted within the housing 1' along a mounting axis of the switch. Such structure may simplify the number of parts, and the attachment of the manipulating part (operation piece 5 and driving piece 6) is more flexible, and the attachment manner of the manipulating part may be arbitrarily changed as required.

[0059] Fig. 11 is a schematic diagram of a switch according to a still embodiment of the present disclosure. The embodiment is substantially identical to the embodiment as shown in Figs. 1 and 10. The difference lies in that compared with the embodiment of Fig. 10, in the embodiment as shown in Fig. 11, the operation piece may be implemented as a rotating knob form 5'; when the operator rotates the operation piece 5', a rotation movement may be directly outputted. The rotation movement may directly drive the driving piece 6 to rotate, for example, within the horizontal plane, and then drive the silver bridge to sway. In the embodiment, the driving piece 6' may omit the protrusion part of the embodiment as shown in Fig. 1. Similarly, the operation piece might not be provided with a push part, simplifying the structure of the driving piece 6'. In one embodiment, the operation piece 5' and the driving piece 6' may be manufactured to be integral. In another embodiment, the operating piece 5' and the driving piece 6' are separate components. With the embodiment as shown in Fig. 11, the driving manner of the silver bridge is changed; the purpose of the embodiment as shown in Fig. 1 can also be implemented.

[0060] Through the above teaching offered in the above description and relevant drawings, many modification manners and other embodiments of the present disclosure will be realized by the technicians in relevant field of the present disclosure. Therefore, it should be understood that the embodiments of the present disclosure are not limited to the preferred embodiments of the present disclosure; moreover, the modification manners and other embodiments intend to be included within the scope of the present disclosure. Besides, although the above description and relevant figures describe the exemplary embodiments under a background of some exemplary combination forms of the parts and/or functions, it should be noted that different combinations of the parts and/or functions may be provided by alternative embodiments without departing from the scope of the present disclosure. As far as this point is concerned, for example, other combination forms of the components and/or functions different from what are explicitly described above may also be expected to be covered within the scope of the present disclosure. Although the specific terms are employed here, they are only used with a general and descriptive meaning, not intended to limit.

What is claimed is:

1. An intermediate switch comprising a longitudinal axis, the switch comprising
 - a manipulating part configured to be rotatable within a plane perpendicular to the longitudinal axis;
 - a pair of inlet terminals;
 - a pair of outlet terminals each provided with a conducting sheet and the conducting sheet being provide with a pair of contacts; and
 - a pair of bridging pieces attached to the pair of inlet terminals respectively and being simultaneously driven by the manipulating part so as to rotate the pair of bridging pieces in opposite directions within planes parallel to the longitudinal axis upon rotation of the manipulating part such that conducting paths between the pair of inlet terminals and the pair of outlet terminals can be switched.
2. The intermediate switch according to claim 1, wherein the manipulating part comprises an operation piece and a driving piece arranged in succession along the longitudinal axis, the operation piece being pivotally mounted and configured to rotate in response to a pressing operation, the driving piece being pivotally mounted and configured to drive the driving piece to rotate around the longitudinal axis within the plane perpendicular to the longitudinal axis upon rotation of the operation piece.
3. The intermediate switch according to claim 1, wherein the manipulating part comprises a rotating knob and a driving piece as integral or separate members arranged along the longitudinal axis, the driving piece being configured to rotate about the longitudinal axis within the plane perpendicular to the longitudinal axis in response to rotation of the rotating knob.
4. The intermediate switch according to claim 2, wherein the operation piece includes a push part extending along a longitudinal axis direction; the driving piece comprises an abutting part mated with the push part, the push part and the abutting part being configured to interact with each other to drive the driving piece to rotate.
5. The intermediate switch according to claim 2, wherein the drive part has a push surface, the abutting part comprises a convex surface adapted to abut the corresponding push surface upon rotation of the operation piece.
6. The intermediate switch according to claim 2, wherein the push part and the abutting part are provided eccentrically relative to the longitudinal axis.
7. The intermediate switch according to claim 2 or 3, wherein the driving piece further comprises a force applying member adapted to apply fore to a corresponding bridging piece.
8. The intermediate switch according to claim 7, wherein the force applying member is a spring; the driving piece comprises a receiving cavity in which the spring is disposed; one end of the spring abuts against a bottom surface of the receiving cavity, while the other end of the spring

engages the bridging piece.

9. The intermediate switch according to claim 8, wherein the bridging piece comprises an engagement part engaged with the force applying member, the engagement part being a polygonal convex part, the force applying member being provided on the convex part.

10. The intermediate switch according to claim 7 or 8, wherein the receiving cavity comprises a notch adapted to provide a moving path to the bridging piece.

11. The intermediate switch according to claim 7 or 8, wherein each of the pair of inlet terminal and/or each of the pair of outlet terminals comprises a V-shaped concave part, the bridging piece further comprises a V-shaped convex part mated with the V-shaped concave part.

12. The intermediate switch according to claim 7, wherein the force applying member is a driving arm an end of which abuts the bridging piece.

13. The intermediate switch according to claim 12, wherein each of the pair of inlet terminal and/or each of the pair of outlet terminals comprises a convex-shaped surface so as to drive the bridging piece to sway along the convex surface in response to rotation of the driving piece so as to establish a connection between the inlet terminal and a corresponding outlet terminal via the bridging piece.

14. The intermediate switch according to claim 2 or 3, wherein the switch further comprises a housing and a base as integral or separate members arranged along the longitudinal axis, the base is provided with an opening extending along the longitudinal axis direction, a pivotal shaft of the driving piece comprising a claw part; through cooperation between the claw part and the opening, the driving piece is mounted to the base; and the operation piece is fitted to the housing via an axial hole.