

CONNECTION SYSTEM AND METHOD FOR ELECTRICAL OUTLETS

INCORPORATION BY REFERENCE

[0001] The following publications are referred to in the present application:

PCT/AU12014/000545 entitled “Electrical Connector, System and Method”

PCT/AU12014/000544 entitled “Batten Holder, Connector, System and Method”

PCT/AU12011/001675 entitled “Touch Switch”

PCT/AU2013/001274 entitled “General Power Outlet and Remote Switch Module”

PCT Application No. PCT/AU2011/001532 published as WO2012/068635 entitled “USB Outlet Charger”

Australian Provisional Patent Application No 2014905210 entitled “Electrical System, Apparatus and Method”

Australian Provisional Patent Application No 2014905212 entitled “Inductive Power Transfer In an Electrical Outlet”

Australian Provisional Patent Application No 2014905211 entitled “Connection System and Method for Electrical Outlets”

Australian Provisional Patent Application No 2014905209 entitled “Switch Assembly, System and Method”

Australian Provisional Patent Application No 2014905213 entitled “Push Button Switch Assembly”

Australian Provisional Patent Application No 2014905203 entitled “Switch Assembly with Rotatable Operational Part”

[0002] The entire content of each of these documents is hereby incorporated by reference.

PRIORITY

[0003] The present application claims priority from the following applications:

Australian Provisional Patent Application No 2014905210 entitled “Electrical System, Apparatus and Method”

Australian Provisional Patent Application No 2014905212 entitled “Inductive Power Transfer In an Electrical Outlet”

Australian Provisional Patent Application No 2014905211 entitled “Connection System and Method for Electrical Outlets”

Australian Provisional Patent Application No 2014905209 entitled “Switch Assembly, System and Method”

Australian Provisional Patent Application No 2014905213 entitled “Push Button Switch Assembly”

Australian Provisional Patent Application No 2014905203 entitled “Switch Assembly with Rotatable Operational Part”

Chinese Patent Application No 201410795485.8 entitled “Hybrid Switch Mechanism”

Chinese Patent Application No 201410795482.4 entitled “Switch Assembly With Rotatable Operational Part”

Chinese Patent Application No 201410795430.7 entitled “Push-Button Switch Assembly and Operational Part”.

[0004] The entire content of each of these documents is hereby incorporated by reference.

TECHNICAL FIELD

[0005] The present application relates to electrical outlets and switch plates and to electrical and/or mechanical components for connection thereto.

BACKGROUND

[0006] A typical electrical outlet or a switch plate usually comprises a grid for mounting to a surface such as a wall, and a faceplate connected to the grid. The grid and faceplates will often have at least one aperture behind which a component containing an electrical and/or mechanical element can be mounted to allow access to the electrical and/or mechanical element through the aperture. One example of such an electrical and/or mechanical element is a switch.

[0007] A typical connection arrangement for connecting the component to the grid is by way of one or more deflectable clips or protrusions disposed on one or more walls of the component, which are received in corresponding recesses of a mounting region of the grid. To form the connection, the installer must align the one or more protrusions of the component with the corresponding one or more recesses of the mounting region, and apply force to the component to allow the protrusions to deflect or otherwise deform to then be released into the corresponding recess, to thereby retain the module to the mounting region.

[0008] An example of such a component is a switch mechanism, or switch mech, which houses a switch for actuation by a user. Figure 1 shows an example of such a switch mech.

[0009] In this Figure, switch mech 10 comprises a housing 11 having four walls. At the front face of the housing is an interface 12, which in this case is a dolly of a switch. The interface 12 controls internal parts housed in the housing 11 of switch mech 10.

[0010] At the front face of the switch mech is a series of deflectable tabs or clips 13 surrounding the dolly 12. Figure 2 shows a close-up view of the deflectable tab or clip 13, showing a front sloping face 13a and a rear face 13b. Space 14 under the deflectable tab or clip 13 allows the deflectable tan or clip 13 to deflect upon external pressure being applied as described below. Upon removal of the external pressure, the deflectable tab or clip returns to its undeflected state due to the resiliency of the material from which the deflectable tab or clip is made.

[0011] Figure 3 shows an example of a mounting region 20 which may be disposed on or a part of, a switch plate 30 (see Figure 5) or an electrical power outlet 40 (see Figure 6). Mounting region 10 in this arrangement has recesses 22 for receiving the deflectable tab or clip 13.

[0012] To connect the switch mech 10 to the mounting region 20, the switch mech 10 is inserted into the mounting region 20 with dolly 12 protruding or accessible through aperture 21. This places sloping front face 13a of deflectable tab or clip 13 into contact with the sloped face 22a of recess 22 as seen in Figure 4. Force is then applied by the installer by pushing down on the switch mech 10. This force causes sloping front face 13a to be deflected inwards as it slides over sloped face 22a until it passes over vertical face 22b and then as the inward pressure from vertical face 22b disappears, deflectable tab or clip 13 resumes its undeflected state and is retained within the recess 22 with rear face 13b engaged by horizontal face 22c to thereby retain switch mech 10 to the mounting region 20.

[0013] Figure 5 shows switch mech 10 thus connected to a switch plate 30 and Figure 6 shows switch mech 10 connected to an electrical outlet 40. In this view, dolly 12 is seen protruding from aperture 21.

[0014] In the event that it is necessary to remove or replace the switch mech 10, once installed, it is then necessary for each tab or clip to be individually forced out of the corresponding recesses 22 and the switch mech 10 pulled out. This can be difficult and time-consuming and can require a separate tool.

SUMMARY

[0015] According to a first aspect, there is provided a housing for housing at least a portion of a component for connection to a mounting region of an electrical outlet or switch plate, the housing comprising: at least one wall; and at least one non-deflectable retaining surface on at least a portion of the at least one wall for engaging with a sliding connector.

[0016] According to a second aspect, there is provided a component comprising: the housing according to the first aspect; component parts at least partially housed within the housing; and a component interface for controlling at least one of the component parts.

[0017] According to a third aspect, there is provided a system comprising: an electrical outlet or switch plate comprising a mounting region; and a component connected to the mounting region, the component comprising:

at least one wall;

at least one retaining surface on at least a portion of the at least one wall;

a component interface disposed at one end of the component; and

component parts at least partially housed within the housing and controlled by the component interface; wherein

the component is connected to the mounting region via a sliding connector engaging the at least one retaining surface to thereby retain the component to the mounting region.

[0018] According to a fourth aspect, there is provided an electrical outlet or switch plate comprising a mounting region for receiving a component, the mounting region comprising at least one aperture or channel for receiving a sliding connector for engagement with a retaining surface of the component to thereby retain the component to the mounting region.

[0019] According to a fifth aspect, there is provided a method of connecting a component to an electrical outlet or switch plate, the method comprising:

placing the component at a mounting region of the electrical outlet or switch plate and

sliding a sliding connector through a portion of the mounting region to engage a

retaining surface of the component to thereby retain the component to the electrical outlet or switch plate.

[0020] According to a sixth aspect, there is provided a method of disconnecting a component connected to an electrical outlet or switch plate, the method comprising sliding a sliding connector in the electrical outlet or switch plate to disengage from a retaining surface of the component and removing the component from the electrical outlet or switch plate.

[0021] According to a seventh aspect, there is provided a method of connecting a plurality of components to an electrical outlet or switch plate, the method comprising placing the plurality of components at respective mounting regions of the electrical outlet or switch plate and sliding a sliding connector through a portion of the respective mounting regions to engage with a retaining surface of a first of the plurality of components, and with a retaining surface of a second of the plurality of components, thereby retaining the plurality of components to the electrical outlet or switch plate.

[0022] According to an eighth aspect, there is provided a method of disconnecting a plurality of components from an electrical outlet or switch plate, the method comprising sliding a sliding connector in the electrical outlet or switch plate to disengage with a retaining surface of a first of the plurality of components, and from a retaining surface of a second of the plurality of components, and then removing the plurality of components from the electrical outlet or switch plate.

[0023] According to a ninth aspect, there is provided an interface between a mounting region of an electrical outlet and a component, the interface comprising an aperture or channel in the mounting region, having therein a sliding connector, which is engaged with a retaining surface of the component, to thereby retain the component to the mounting region.

[0024] According to a tenth aspect, there is provided a sliding connector comprising a tab and at least two legs extending substantially perpendicularly therefrom.

BRIEF DESCRIPTION OF DRAWINGS

[0025] Embodiments of the various aspects described herein will be detailed with reference to the accompanying drawings in which:

[0026] Figure 1 – shows a prior art component as a switch mechanism;

[0027] Figure 2 – shows the deflectable tab or clip of the switch mechanism of Figure 1;

[0028] Figure 3 – shows a prior art mounting region of an electrical outlet or switch plate;

[0029] Figure 4 – shows a cross-sectional view of the recess of the mounting region of Figure 3;

[0030] Figure 5 – shows the switch mechanism of Figure 1 connected to a switch plate;

[0031] Figure 6 – shows an electrical outlet with the switch mechanism of Figure 1 connected;

[0032] Figure 7A – shows an embodiment of a housing according to one aspect described, which has a wall and a protrusion providing a retaining surface on a portion of the wall;

[0033] Figure 7B shows the housing of Figure 7A with the retaining surface provided along the entire wall;

[0034] Figure 8A – shows another embodiment of the housing of Figure 7A in which the retaining surface is provided by a recess around the entire wall;

[0035] Figure 8B – shows another embodiment of the housing of Figure 8A in which the retaining wall is provided by a recess running along a portion of the wall;

- [0036] Figure 9A – shows another embodiment of the housing with three walls with the retaining surface provided by a protrusion along a portion of at least one wall;
- [0037] Figure 9B - shows another embodiment of the housing with three walls with the retaining surface provided by a protrusion along the entire length of all three walls;
- [0038] Figure 10A - shows another embodiment of the housing with three walls with the retaining surface provided by a recess along the entire length of all three walls;
- [0039] Figure 10B – shows another embodiment of the housing with three walls with the retaining surface provided by a recess along a portion of at least one wall;
- [0040] Figure 11A - – shows another embodiment of the housing with four walls with the retaining surface provided by a protrusion along a portion of at least one wall;
- [0041] Figure 11B - shows another embodiment of the housing with four walls with the retaining surface provided by a protrusion along the entire length of all four walls;
- [0042] Figure 11C – shows another embodiment of the housing with four walls with the retaining surface provided by a protrusion along the entire length of two walls;
- [0043] Figure 12A - shows another embodiment of the housing with four walls with the retaining surface provided by a recess along the entire length of all four walls;
- [0044] Figure 12B – shows another embodiment of the housing with four walls with the retaining surface provided by a recess along a portion of at least one wall;
- [0045] Figure 12C – shows another embodiment of the housing with four walls with the retaining surfaces provided by recesses along two walls;
- [0046] Figure 13A – shows another embodiment of the housing with one wall and the retaining surfaces provided by two protrusions at two levels on the same side;
- [0047] Figure 13B – shows another embodiment of the housing with one wall and the retaining surfaces provided by two recesses at two levels at different sides;
- [0048] Figure 14A – shows another embodiment of the housing with four walls with the retaining surfaces provided by recesses along two walls at different levels;
- [0049] Figure 14B - shows another embodiment of the housing with four walls with the retaining surfaces provided by protrusions along two walls at different levels;
- [0050] Figure 15 - shows another embodiment of the housing with four walls with the retaining surfaces provided by a combination of protrusions and recesses at four different levels;
- [0051] Figure 16A – shows an embodiment of the component being a switch mechanism, with the retaining surface being provided by a recess;
- [0052] Figure 16B – shows an embodiment of the component being a switch mechanism, with the retaining surfaces being provided by protrusions;
- [0053] Figure 17 – shows an embodiment of a mounting region;
- [0054] Figure 18 – shows an embodiment of a sliding connector;

- [0055] Figure 19 – shows an embodiment of a component connected to a mounting region with a sliding connector;
- [0056] Figure 20A – shows a side cross-sectional view of the arrangement in Figure 19 where the retaining surface is provided by a recess;
- [0057] Figure 20B - shows a side cross-sectional view of the arrangement in Figure 19 where the retaining surface is provided by a protrusion;
- [0058] Figure 21A – shows an embodiment where the sliding connector is slid directly into the component having a recess;
- [0059] Figure 21B - shows an embodiment where the sliding connector is slid directly into the component having a protrusion;
- [0060] Figure 21C – shows a top view of an embodiment where the sliding connector is slid sideways into the component having a recess;
- [0061] Figure 21D – shows a side view of the arrangement of Figure 21C;
- [0062] Figure 22 – shows an embodiment of a mounting region or a plurality of mounting regions, with respective channels;
- [0063] Figure 23 – shows the mounting region of Figure 22 with a component connected thereto by two sliding connectors;
- [0064] Figure 24 – shows another embodiment of a sliding connector with extension portions;
- [0065] Figure 25 – shows a cross-sectional view of an embodiment of Figure 23 with two components;
- [0066] Figure 26 – shows a cross –section al view of the arrangement of Figure 25 in a plane parallel to the plane of the mounting region, showing the connection of the components with the sliding connectors;
- [0067] Figure 27 – shows a close-up view of the interface between the mounting region and the component;
- [0068] Figure 28 – shows an embodiment of the arrangement of Figure 23 with six components;
- [0069] Figure 29 – shows a close-up view of the interface between the component and the mounting region;
- [0070] Figure 30 – shows the action of the extension portions on the sliding connector with the retaining surfaces of the component to efficiently connect and disconnect the component from the mounting region;
- [0071] Figure 31 – shows another embodiment of an electrical outlet or switch plate with mounting region;
- [0072] Figure 32 – shows another embodiment of a component;

[0073] Figure 33 – shows another embodiment of a sliding connector for use with the mounting region of Figure 31;

[0074] Figure 34 – shows the component of Figure 32 connected to the mounting region of Figure 31 with the sliding connector of Figure 33;

[0075] Figure 35 – shows a front view of the arrangement of Figure 34 when the component is a switch mechanism, to form a switch plate;

[0076] Figure 36 – shows another application of the sliding connector of Figure 33;

[0077] Figure 37 – shows a further application of the sliding connector of Figure 33;

[0078] Figure 38 – shows another embodiment of sliding the connector of Figure 33 with four legs;

[0079] Figure 39 – shows the application of the sliding connector of Figure 38 to a grid;

[0080] Figure 40 – shows another embodiment of the sliding connector of Figure 33 with four legs, having different lengths;

[0081] Figure 41 – shows an application of the sliding connector of Figure 40 and the sliding connector of Figure 33 to a grid;

[0082] Figure 42 – shows another application of the sliding connector of Figure 38;

[0083] Figure 43 – shows another embodiment of a sliding connector with five legs and its application to a grid;

[0084] Figure 44 – shows a front view of an electrical outlet with two electrical sockets, two switches and a USB port;

[0085] Figure 45A – shows an embodiment of the component as a dolly switch mechanism;

[0086] Figure 45B - shows an embodiment of the component as a touch switch mechanism;

[0087] Figure 45C - shows an embodiment of the component as a USB charger;

[0088] Figure 45D - shows another embodiment of the component as a USB charger;

[0089] Figure 45E - shows an embodiment of the component as a USB charger;

[0090] Figure 45F – shows an embodiment of the component as a data port connector;

[0091] Figure 45G - shows an embodiment of the component as a coaxial connector;

[0092] Figure 45H - shows an embodiment of the component as an audio banana mechanism;

[0093] Figure 45I – shows an embodiment of the component as an HDMI connector;

[0094] Figure 45J - shows an embodiment of the component as an F-type signal connector;

[0095] Figure 45K - shows an embodiment of the component as a Cat 5 telephone connector;

[0096] Figure 45L - shows an embodiment of the component as a fan controller;

[0097] Figure 45M - shows another embodiment of the component as a USB charger;

[0098] Figure 46 – shows a flow chart of a method of connecting a component to a mounting region;

[00099] Figure 47 - shows a flow chart of a method of connecting a plurality of components to a mounting region;

[00100] Figure 48 - shows a flow chart of a method of disconnecting a component from a mounting region;

[00101] Figure 49 - shows a flow chart of a method of disconnecting a plurality of components from a mounting region;

[00102] Figure 50A – shows a top perspective view of another embodiment of the mounting region;

[00103] Figure 50B – shows an underside perspective view of the mounting region of Figure 50A; and

[00104] Figure 50C – shows a side view of the mounting region with slot for retaining the connector.

DESCRIPTION OF EMBODIMENTS

[00105] According to a first aspect described herein, there is provided a housing for housing at least a portion of a component for connection to a mounting region of an electrical outlet or switch plate. Figure 7A shows an example of a housing 110. In this aspect, the housing 110 comprises at least one wall 111, and at least one non-deflectable retaining surface 120 on at least a portion of the at least one wall 111 for engaging with a sliding connector as will be described in more detail below.

[00106] Housing 110 in use, houses component parts to form a component 100 as will be described in more detail below.

[00107] In one embodiment, housing 110 is provided by a cylindrical structure having a single wall 111. Extending from wall 111 is a protrusion 122 providing a retaining surface 120 for engagement with a sliding connector as will be described in more detail below. In this embodiment, retaining surface 120 is provided on a portion of the wall 111.

[00108] Figure 7B shows another embodiment of housing 110 in which retaining surface 120 is provided by protrusion 122, and extends around the entire wall 111.

[00109] Figure 8A shows another embodiment in which the retaining surface 120 is provided by a recess 123 in the wall 111 of housing 110. In the embodiment of Figure 8A, the retaining surface is provided around the entire wall 111. Another embodiment is shown in Figure 8B in which

the retaining surface 120 as provided by recess 123, is provided only along a portion of the wall 111.

[00110] Figure 9A shows another embodiment of a housing 110 with three walls in which the retaining surface 120 is provided by a protrusion 122 on the wall 111 of housing 110. In the embodiment of Figure 9A, the retaining surface is provided along only a portion of wall 111. Another embodiment is shown in Figure 9B in which the retaining surface 120 as provided by protrusion 122, which is provided along the entire length of all three walls 111.

[00111] Figure 10A shows another embodiment in which the retaining surface 120 is provided by a recess 123 in the wall 111 of housing 110. In the embodiment of Figure 10A, the retaining surface is provided around the entire of all three walls 111. Another embodiment is shown in Figure 10B in which the retaining surface 120 as provided by recess 123, is provided only along a portion of one of the walls 111.

[00112] Figure 11A shows another embodiment of a housing 110 with four walls in which the retaining surface 120 is provided by a protrusion 122 on the wall 111 of housing 110. In the embodiment of Figure 11A, the retaining surface is provided along only a portion of wall 111. Another embodiment is shown in Figure 11B in which the retaining surface 120 as provided by protrusion 122, which is provided along the entire length of all four walls 111.

[00113] Figure 11C shows another embodiment in which housing 110 has two retaining surfaces 120, one each on two opposite walls 111, provided by protrusions 122.

[00114] Figure 12A shows another embodiment in which the retaining surface 120 is provided by a recess 123 in the wall 111 of housing 110. In the embodiment of Figure 12A, the retaining surface is provided around the entire length of all four walls 111. Another embodiment is shown in Figure 12B in which the retaining surface 120 as provided by recess 123, is provided only along a portion of the wall 111.

[00115] Figure 12C shows another embodiment in which housing 110 has two retaining surfaces 120, one each on two opposite walls 111, provided by recesses 123.

[00116] It will be appreciated that housing 110 can have any suitable configuration and any number of sides, including 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10-20 and more than 20 sides.

[00117] In another aspect, there is provided a housing as previously described, wherein the at least one non-deflectable retaining surface is provided at a first level of at least one wall, and a second non-deflectable retaining surface is provided at a second level of the at least one wall.

[00118] Figure 13A shows an embodiment of this aspect, in which housing 110 (in this embodiment, cylindrically-shaped), has retaining surface 120 provided by protrusion 122 located at a first level 105, and second retaining surface 121 provided by protrusion 122 at second level 106, different from the first level. This arrangement allows component 100 having housing 110 to be connected to the mounting region at different heights, as will be described in more detail below.

[00119] In the embodiment shown in Figure 13A, the retaining surface 120 and the second retaining surface 121 are provided by recesses 123 and are disposed at a first level 105 and a second level 106 to provide the ability to tailor the mounting height of the component 100 housed by housing 110 as previously described.

[00120] It will be appreciated that further levels are also possible, including a third level, a fourth level, a fifth level, a sixth level, a seventh level, an eighth level, a ninth level, a tenth level and more than ten levels. Furthermore, any combination of housing shape and number of levels is possible, as is any combination of recesses and/or protrusions. In one embodiment, as shown in Figure 15, a housing 110 has four retaining surfaces 120 provided at four different levels 105, 106, 107, and 108 with one retaining surface 120 being provided by recess 123 at a first level 105, and three retaining surfaces 120 being provided by three protrusions 123 at second level 106, third level 107 and fourth level 108.

[00121] It will be appreciated that the recess 123 can be provided by any suitable means including molding in the housing, etching, scoring, or otherwise depleting the material at the site to provide the recess 123. The protrusion can also be provided by any suitable means including molding, deposition or adhering a separate piece to the housing. The protrusions can be formed of the same material as the housing or may be a different material.

[00122] According to another aspect, there is provided a component 100, which comprises a housing as previously described, housing, at least partially, component parts that provide functionality for the component. A component interface is also provided, which allows a user to interact with to operate and/or control the component 100.

[00123] The component 100 can be any component that would be attached to and used in an electrical outlet. One such example is a switch mechanism (or switch “mech”). Different types of switch mechanisms include a rocker switch in which the interface can be a dolly, a push button switch, in which the interface can be a button, a rotary switch, in which the interface can be a rotary dial, a touch switch in which the interface can be a capacitance sensor for sensing changes in capacitance of a touch surface upon contact by a user, or a toggle switch, in which the interface is a lever switch.

[00124] An example of a component 100 provided as a switch mech, and in particular, a dolly switch mech, is shown in Figure 16A. Component 100 comprises in this embodiment, four walls 111, component interface 130, being a dolly 131A, and retaining surface 120, provided by recess 123. In this embodiment, retaining surface 120 is provided along the full length of each of the four walls 111.

[00125] Another example of component 100 as a switch mech, being a dolly switch mech, is shown in Figure 16B. In this example, the retaining surface 120 is provided by protrusions 122, in this embodiment, one protrusion being provided on each of the four sides.

[00126] In one application, it is desired to connect component 100 to a mounting region 220 (of for example, a switch plate 300) to allow component interface 130 (dolly 131A) to protrude through, or be accessible through, aperture 221. According to an aspect described herein, mounting region 220 comprises at least one channel 222 as shown in Figure 17, into which a sliding connector (see Figure 18) can be slid to providing a connection means to engage with retaining surface 120 of component 100 when in place. The embodiment shown in Figure 17 shows one channel 222, but in some embodiments, mounting region 220 may have two or more channels 222.

[00127] Figure 18 shows an example of one embodiment of sliding connector 400 which in this embodiment consists of a thin strip of material such as plastic or metal. In one embodiment, a tab 401 may be provided at one or both ends to provide a gripping region, but in other embodiments, no such tab is provided.

[00128] Figure 19 shows an example in which component 100 is placed within mounting region 220 and connected thereto by at least one sliding connector 400. In this embodiment, only one sliding connector 400 is used to connect component 100 to mounting region 220. In other embodiments, where a second or more channels 222 are provided, further sliding connectors 400 may be used, or it may be decided to only use one channel even where others are provided.

[00129] Figure 20A shows a cross-section of the connection region of Figure 19. In this view, channel 222 is shown within mounting region 220. Within channel 222, sliding connector 400 is disposed. As can be seen, a portion of sliding connector 400 extends outside of the channel 222 and is received within recess 123 to engage with retaining surface 120 of component 100 to thereby retain component 100 to mounting region 220. In this view, dolly 131A is seen protruding through aperture 221 to be accessible by a user. It will be appreciated however, that in some embodiments where there is no component interface that must be manually accessed by a user and where there may be no aperture 221 in the mounting region, no part of component 100 will protrude through any part of mounting region 100. An example of such an embodiment is a touch switch, in which component 100 is activated by the mere proximity of a user's finger for example, and no aperture is required, as will be understood by the person skilled in the art.

[00130] Figure 20B shows the arrangement of Figure 20A, in the embodiment in which component 100 has retaining surface 120 provided by protrusion 122 as shown in Figure 16B. In this embodiment, it will be appreciated that component 100 is placed at or within mounting region 220 so that the retaining surface 120 lies at or near the level of the bottom of channel 222 as seen in this Figure, and then sliding connector 400 is slid into channel 222. Again, it can be seen that a portion of sliding connector 400 extends from the channel 222 to cover and engage with retaining surface 120 of protrusion 122 to thereby retain component 100 to the mounting region 220.

[00131] In another embodiment as shown in Figures 21A and 21B, the direction of sliding the sliding connector 400 is directly into the component 100, rather than transverse to it as in the embodiments of Figures 17 to 20B. The embodiment of Figure 21A shows sliding connector 400 having been slid into channel 222 and directly into recess 123 of component 100 to engage with retaining surface 120 of recess 123. The embodiment of Figure 21B shows sliding connector 400 having been slid into channel 222 to lie on top of protrusion 122 of component 100 to engage retaining surface 120 of protrusion 122.

[00132] In another embodiment, as shown in Figures 21C and 21D, sliding connector 400 may also be slid sideways into a recess 123, rather than longitudinally as in previous examples. As shown in a top view of Figure 21C, component 100 is in place in mounting region 220, with one sliding connector 400 in place in a recess 123 (not visible in this view), while another sliding connector 400' is about to be slid into place in the other recess 123 on the other side of component 100. Figure 21D shows a side view of the arrangement of Figure 21C in which component 100 is in place in mounting region 220, with sliding connector 400 having been slid sideways along its length into recess 123 of

component 100, while sliding connector 400' is about to be slid into place sideways, along its length, into recess 123' via channel 222 in mounting region 220. In this embodiment, it can be seen that component 100 has two levels of recesses to allow control of the depth of connection of component 100.

[00133] It will be appreciated that the same arrangement as shown in Figures 21C and 21D can be provided in which the component 100 has retaining surfaces 120 provided by protrusions.

[00134] As previously described, mounting region 220 can be provided on an electrical outlet or a switch plate as will be understood by the person skilled in the art. In some embodiments, multiple mounting regions are provided. In some embodiments, mounting region 220 is provided on a grid plate of an electrical outlet or switch plate and in other embodiments, mounting region 220 is provided on another part of the electrical outlet or switch plate.

[00135] Thus, there is provided in a broad sense, an interface between a mounting region 220 of an electrical outlet 200 or a switch plate 300, and a component 100, the interface comprising a channel 222 in the mounting region 220, having therein a sliding connector 400, which is engaged with a retaining surface 120 of the component 100, to thereby retain the component 100 to the mounting region 220.

[00136] Figure 22 shows an embodiment of a grid 210 for an electrical outlet 200 or switch plate 300. In this embodiment, there are six mounting regions 220 for receiving respective components 100, each with respective aperture 221. Associated with each mounting region 220 are channels 222 for receiving respective sliding connectors 400 as described above.

[00137] Figure 23 shows the grid 210 of Figure 22 with one component 100 received within mounting region 220 and two sliding connectors 400 slid into respective channels 222 to thereby retain component 100 to the mounting region 220 and therefore the electrical outlet 200 or switch plate 300 when the grid 210 is connected to the electrical outlet 200 or switch plate 300. In the embodiment as shown in Figure 23, sliding connectors 400 also have tabs 401 to facilitate handling. These provide a friction or gripping surface to allow sliding connector to be more easily withdrawn from channel 222 by use of a fingernail for example.

[00138] Figure 24 shows one embodiment of sliding connector 400. In this embodiment, sliding connector 400 has a tab 401 at one end to facilitate manipulation, and also has a series of

extension portions 402 along its length. These extension portions 402 allow the retaining function with a smaller movement of the sliding connector as will be described in more detail below.

[00139] Figure 25 shows a cross-section of two components 100 connected to grid 210. In this view, sliding connectors 400 can be seen received within recesses 123 of components 100 to engage with corresponding retaining surfaces 120 (not visible in this view).

[00140] Figure 26 shows another view of the arrangement of Figure 25 with the cross section taken along a different line, in particular, in the plane of the grid 210. In particular, this view shows the placement of the bottom of components 100 into their respective mounting regions 220 with sliding connectors 400 received in respective channels 222. In this view, it can be seen that the extension portions 402 are received within the recesses 123 of components 100 to engage with retaining surfaces 120 (not visible in this view) to thereby retain components 100 to the mounting regions 220.

[00141] Figure 27 shows a close up view of the interface between mounting region 220 and component 100. In particular, there is shown sliding connector 400 within channel 222 with extension portion 402 received within recess 123 and engaging retaining surface 120 to thereby retaining component 100 to mounting region 220.

[00142] Figure 28 shows five components 100 connected to grid 210 via sliding connectors 400. One component 100' is shown as being in the process of being placed within its mounting region 220, which, when in place, will bring recess 123 in line with extended sliding connectors 400 and 400', which can then to be slid into respective channels 222 and 222'. This sliding action causes sliding connectors 400 and 400' to be received within respective recesses 123 (not visible in this view) and 123' to then retain component 100' to grid 210.

[00143] Figure 29 shows a close up of the interface between a component 100 and the mounting region 220 of the arrangement of Figure 28B. In particular, sliding connector 400 can be seen within channel 222 of mounting region 220 and received within recess 123 of component 100 to thereby retain component 100 to mounting region 220.

[00144] Figure 30 shows another embodiment in which component 100 has retaining surfaces 120 provided by protrusions 122. In this view, it can be seen that sliding connector 400' is completely inserted within channel 222' and that in this position, extension portion 402' of sliding connector 400' is disposed over retaining surface 120' provided by protrusion 122', to thereby

engage with retaining surface 120' to retain component 100 to mounting region 220. It can also be seen that in the case of sliding connector 400, which is not fully inserted into channel 222, extension portions 402 lie on either side of protrusion 122 and do not cover or engage with retaining surface 120. Accordingly, this sliding connector 400 is not retaining component 100 to mounting region 220.

[00145] Accordingly, it can be seen that the provision of extension portions 402 on sliding connector 400 allow for locking and unlocking or retention and non-retention of component 100 to mounting region 220 with only a small movement of sliding connector 400. In use, indicators such as markings on the sliding connector 400 can be provided to allow the user to know how far to insert or withdraw sliding connector 400 from channel 222 to release component 100.

[00146] Figure 31 shows another embodiment for use in relation to an electrical outlet 200 or switch plate 300 using a different embodiment of sliding connector 400 (see Figure 33). In this embodiment, electrical outlet 200 or switch plate 300 comprises grid 210 with mounting region 220. Mounting region 220 has two channels 222 provided on the other side of mounting region 220. It will be appreciated that in some embodiments, a channel 222 is provided by a space behind a channel aperture 223 in mounting region 220. The sliding connector 400 is received within this space forming the channel 222. Accordingly, there does not need to be a physical surrounding or walls to channel 222. In one embodiment, there is also provided a slot 226 with one end 226a. The function of this will be described in more detail further below.

[00147] Also visible in Figure 31 is a recess 225, which is used in some embodiments to accommodate protrusion 122 of component 100. The shape of recess 225 can take on any suitable shape and can be used in conjunction with protrusion or protrusions 122 (for example on different levels) to form a keystone arrangement to prevent components 100 that are not intended or incompatible with the outlet 200.

[00148] For example, if the recess 200 is triangular in shape, a component 100 will need to have protrusions 122 forming a commensurate triangle. This can be provided by an upper protrusion and a lower protrusion with the upper protrusion being wider than the lower protrusion.

[00149] Figure 32 shows an embodiment of a component 100 with retaining surfaces 120 provided on each of four sides (only two sides visible in this view) by respective protrusions 122.

[00150] Figure 33 shows a different embodiment of sliding connector 400 in the form of a clip with a tab 401 and legs 403. In one embodiment, a connector protrusion 404 is provided on one or more of the legs 403, whose function will be described further below.

[00151] Figure 34 shows the assembled arrangement with component 100 placed within mounting region 220, and then sliding the legs 403 of connector 400 into channel apertures 223 (see Figure 31) such that legs 403 slide over protrusions 122 of component 100 to engage (that is, to cover) respective retaining surfaces 120. It will be understood that in some embodiments, sliding connector need not contact retaining surface 120 at all times to engage retaining surface 120. In some embodiments, there may be a small gap between retaining surface 120 and sliding connector 400 to allow slight movement therebetween, but that at some stage, as component 100 is raised, retaining surface 120 will contact sliding connector 400 to prevent further movement of component 100.

[00152] The function of connector protrusion 404 can be seen in this arrangement. As connector 400 is slid into place as described above, connector protrusion 404 is received within slot 226. When connector 400 is withdrawn from mounting region 220 to release component 100 or insert a new component 100, connector protrusion 404 slides along slot 226 until it comes into contact with end 226a. This causes connector 400 to stop and be prevented from further withdrawal, thus retaining connector 400 within mounting region 220 to prevent connector 400 from becoming separated from mounting region 220 and perhaps becoming lost. This also facilitates and speeds up the connection and disconnection process, as the user does not need to fully re-engage connector 400 each time a component 100 is to be connected, but rather simply needs to push connector 400 back into mounting region 220.

[00153] In another embodiment of connector 400, a corresponding recess to recess 225 in mounting region 220 described above, is provided on the inside wall of the end of connector 400 (e.g. tab 401). This allows protrusion(s) 122 that may be on that side of component 100 to be accommodated therein to allow a flush fitting of connector 400. In a further refinement, protrusion 122 may be split into two at the same level to allow a blade of a screwdriver or other tool to be inserted between the wall of component 100 and the inner wall of connector 400 to facilitate withdrawal of connector 400 from the component 100 and mounting region 220.

[00154] Connector 400 can be fully released from mounting region 220 by flexing legs 403 to disengage connector protrusion from slot 226.

[00155] Figure 35 shows a front view of the arrangement of Figure 34 in the case where component 100 is a switch mechanism with component interface 130 being a dolly 131A. In this embodiment, the arrangement forms switch plate 300.

[00156] Figure 36 shows another application of the embodiment of sliding connector 400 as a clip with two legs 403, in use on a grid with two mounting regions 220. In this application, two clips as described above are used, with one in each mounting region.

[00157] Figure 37 shows the application of the sliding connector 400 as the clip applied to a grid 210 with four mounting regions 220.

[00158] Figure 38 shows a modified form of sliding connector 400 as the clip, this time with four legs 403. This embodiment can be used to secure three components 100 in respective mounting regions, as shown in Figure 39 (components not shown for clarity).

[00159] Figure 40 shows another embodiment of sliding connector 400 as a clip, with four legs 403, but with two of them of different lengths to the other two. This allows for connection of a component 100 in a mounting region 220 that is offset from the others. An application of this is shown in Figure 41. Figure 41 also illustrates the possibility of combining different embodiments of sliding connector 400. In this example, the sliding connector with four legs 403 is used to connect components 100 to three mounting regions 220, while two sliding connectors 400 with two legs 403 are used to connect components 100 to two mounting regions 220. It will be appreciated that any combination of sliding connectors 400 can be used as required for a particular application.

[00160] In another embodiment, in which the grid 210 has six mounting regions for connecting six components 100, two sliding connectors of the type shown and described with reference to Figure 38 can be used as shown in Figure 42. In another embodiment of this application, a single sliding connector 400 with four legs 403 could be used in this application, where the legs 403 of the sliding connector are longer, to enable them to slide in to the second stage of mounting regions to thereby retain the components in all six mounting regions using a single sliding action.

[00161] Of course, it will be appreciated that this embodiment also allows disconnection of all six components from their respective mounting regions 220 in a single action by sliding out sliding connector 400 using tab 401.

[00162] In a further embodiment as shown in Figure 43, a sliding connector 400 has five legs 403 and can be used to connect four components 100 in four respective mounting regions 220 in a single action.

[00163] It will be appreciated that any other modification of sliding connector 400 can be used, including one with six legs, seven legs, eight legs, nine legs, ten legs and more than ten legs. The legs can be of the same length or in other embodiments, can be of varying lengths, depending upon the application and the geometry of the components being used.

[00164] Figure 44 shows another embodiment in which an electrical outlet 200 is formed, with power sockets 224 for providing mains or supply power to an electrical device, and component interfaces 130, provided in this embodiment as two dolly switches 131A and a USB port 140A. In this embodiment, one, two or all three of components 100 providing interfaces 131A and 140A may be connected to power outlet 200 by one or more of the embodiments described herein using the sliding connector 400.

[00165] In a general form therefore, there is provided a system comprising an electrical outlet 200 or switch plate 300 comprising a mounting region 220 and a component 100 connected to the mounting region 220. The component 100 comprises at least one wall 111, at least one retaining surface 120 on at least a portion of the at least one wall 111, a component interface 130 disposed at one end of the component 100, and component parts at least partially housed within the housing and controlled by the component interface 130, wherein the component 100 is connected to the mounting region 220 via a sliding connector 400 engaging the at least one retaining surface 120 to thereby retain the component 100 to the mounting region 220. It will be appreciated that in this aspect, components 100 that have a retaining surface 120 that is deflectable can also be used, provided that the force applied to the retaining surface 120 by the sliding connector 400 when in use does not exceed the force which causes deflection of the retaining surface 120 so as to release component 100 from connection.

[00166] There is also broadly provided an electrical outlet 200 or switch plate 300 comprising a mounting region 220 for receiving a component 100, the mounting region 220 comprising at least one channel aperture 223 or channel 222 for receiving a sliding connector 400 for engagement with a retaining surface 120 of the component 100 to thereby retain the component 100 to the mounting region 220. It will be appreciated that in this aspect as well, components 100 that have a retaining surface 120 that is deflectable can also be used, provided that the force applied to the retaining

surface 120 by the sliding connector 400 when in use does not exceed the force which causes deflection of the retaining surface 120 so as to release component 100 from connection.

[00167] As previously described, component 100 can be provided by any suitable desired device. Figure 45A shows component 100 as a switch mechanism with component interface 130 being a dolly 131A. In this embodiment, retaining surfaces 120 are provided by the rear side of protrusions 122 as seen in this view.

[00168] Figure 45B shows component 100 provided as a touch switch with component interface 130 provided by a touch sensitive sensor 131B. A suitable component for this application is described in PCT/AU2011/001675 (published as WO 2012/083380) entitled “Touch Switch” previously incorporated by reference. In this embodiment, retaining surfaces 120 are provided on the rear of protrusions 122. In some embodiments, these protrusions are non-deflectable. In other embodiments, these protrusions are deflectable as described previously.

[00169] Figure 45C shows component 100 provided as a Universal Serial Bus (USB) charger with component interface 130 provided by a USB port 140A. Figure 45D also shows component 100 provided as a different embodiment of a USB charger with retaining surfaces 120 provided on the rear of protrusions 122. Figure 45E also shows component 100 provided as a different embodiment of a USB charger with retaining surfaces 120 provided on the rear of protrusions 122. Examples of these USB chargers are described in PCT Application No. PCT/AU2011/001532 published as WO2012/068635 entitled “USB Outlet Charger” previously incorporated by reference.

[00170] Figure 45F shows an embodiment in which component 100 is a Cat 6 data mechanism for providing data to an electrical device. Figure 45G shows an embodiment in which component 100 is a coaxial TV connector. Figure 45H shows an embodiment in which component 100 is an audio banana mechanism. Figure 45I shows an embodiment in which component 100 is an HDMI mechanism. Figure 45J shows an embodiment in which component 100 is an F-type signal connector. Figure 45K shows an embodiment in which component 100 is a Cat 5 telephone connector.

[00171] Figure 45L shows an embodiment in which component 100 is a fan controller. In this embodiment, component 100 is made up of connector part 101, which in use, is received in mounting region 220 (not shown in this view), and an electronics package 102, connected to connector part 101 by a cord 103, which in this embodiment is a plurality of insulated conductive wires. Connector part 101 provides retaining surface 120 (not visible in this view) via recess 123. Electronics package

102 contains component parts 160 being functional electronics such as power control electronics. These component parts are then connected to component interface 130, being a rotary switch 131D. Electronics package 102 can also be connected to a fan motor and /or mains power.

[00172] Figure 45M shows component 100 as a USB charger which is distributed over a number of elements, but still form a single component or module. In this embodiment, component 100 is made up of connector part 101, which in use, is received in mounting region 220 (not shown in this view), and an electronics package 102, connected to connector part 101 by a cord 103, which in this embodiment is an insulated conductor. Connector part 101 provides retaining surface 120 (not visible in this view) via recess 123. Electronics package 102 contains component parts 160 being functional electronics such as power conversion electronics. These component parts are then connected to component interface 130, being USB port 130A. In some embodiments, two USB ports 140A can be provided. Electronics package 102 can also be connected to mains power which is then converted to provide a desired output voltage and current at USB port 130A.

[00173] In other embodiments, the component 100 is a data outlet and the component interface is a data port. An example of such a co to RJ11, RJ14, RJ25, RJ48, RJ61, XLR connectors, XLD connectors, DIN connectors, BNC connectors.

[00174] In other embodiments, the component interface is provided by an analog signal connector such as a TRS, TS or TRRS connector types. Some of these connector types are also known as audio jacks and can be used to connect a device to provide electrical audio signals to the device for playing music or other audio content.

[00175] According to another aspect, there is provided a method of connecting a component 100 to an electrical outlet 200 or switch plate 300. As shown in Figure 45, one embodiment, the method comprises in step 600, placing the component 100 at or in a mounting region 220 of the electrical outlet 200 or switch plate 300, and in step 601, sliding a sliding connector 400 through a portion of the mounting region 220 to engage a retaining surface 120 of the component 100 to thereby retain the component 100 to the electrical outlet 200 or switch plate 300.

[00176] In one embodiment, the method further comprises sliding a second sliding connector 400 to engage with a second retaining surface 120 to provide further securement. Further sliding connectors can also be used to engage with even more retaining surfaces 120.

[00177] In another aspect, there is provided a method of connecting a plurality of components 100 to an electrical outlet 200 or switch plate 300. In this aspect, as shown in Figure 47, the method comprises, in step 610, placing the plurality of components 100 at respective mounting regions 220 of the electrical outlet 200 or switch plate 300 and, then, in step 611, sliding a sliding connector 400 through a portion of the respective mounting regions 220 to engage with a retaining surface 120 of a first of the plurality of components 100, and with a retaining surface 120 of a second of the plurality of components 100, thereby retaining the plurality of components 100 to the electrical outlet 200 or switch plate 300. In this way, multiple components 100 can be easily and quickly connected in effectively a single step after placement.

[00178] It will be appreciated that in embodiments as shown in Figure 28 for example, sliding connector 400 is slid in to engage retaining surfaces 120 of two components 100 from a long side of the electrical outlet 200 or switch plate 300, but in other embodiments, electrical outlet 200 or switch plate 300 are constructed to have channels running lengthwise across the length of the outlet or switch plate. This will allow in this example, three components to be connected with a single sliding connector 400 using a single action of sliding the sliding connector. It will be appreciated that any number of components 100 can be connected in this single movement, including 4, 5, 6, 7, 8, 9, 10 and more than 10 components, provided that the sliding connector is long enough.

[00179] According to another aspect, there is provided a method of disconnecting one or more components 100 from an electrical outlet 200 or switch plate 300. The method of disconnecting a component 100 connected to an electrical outlet 200 or switch plate 300 comprises in the embodiment shown in Figure 48, in step 620, sliding a sliding connector 400 in the electrical outlet 200 or switch plate 300 to disengage from a retaining surface 120 of the component 100 and removing the component 100 from the electrical outlet or switch plate.

[00180] In this embodiment, it will be appreciated that the sliding connector provides the sole retention force, and once the sliding connector 400 is removed, no other retention force is applied to component 100 and it is simply a matter of picking up the connector from its position in or at, the mounting region 220.

[00181] In embodiments in which component 100 is connected to the electrical outlet 200 or switch plate 300 by two or more sliding connectors, the method further comprises sliding out the second or further sliding connectors 400 to release the component.

[00182] According to another aspect, there is provided a method of disconnecting a plurality of components 100 from an electrical outlet 200 or switch plate 300. As shown in Figure 49, the method comprises, in step 630, sliding a sliding connector 400 in the electrical outlet 200 or switch plate 300 to disengage with a retaining surface 120 of a first of the plurality of components 100, and then, from a retaining surface 120 of a second of the plurality of components 100, and then, in step 631, removing the plurality of components 100 from the electrical outlet 200 or switch plate 300.

[00183] As previously described, the plurality of components could be 2, 3, 4, 5, 6, 7, 8, 9, 10 or more than 10. It will be appreciated that this provides a very convenient and quick method of disconnecting a plurality of components.

[00184] In a further embodiment as shown in Figures 50A, 50B and 50C, which show another embodiment of outlet 200 or grid plate in this embodiment, a further refinement is provided for connector 400. In Figures 50A and 50B, slot 226 is shown, as previously described. In this embodiment, slot 226 includes a further slot 226B at one end. In practice, when connector 400 is pushed towards this end, connector protrusion 404 will be caused to engage with and be received by this further slot 226B and be retained within the further slot 226B. This provides a “locking” function, to more securely retain connector 400. Connector protrusion 404 can be caused to enter further slot 226B by any suitable means, including biasing legs 403 such that they will snap into further slot 226B when they have passed the main slot 226.

[00185] In other embodiments, a small protrusion can be provided on the wall of and in to slot 226 just prior to the end of slot 226 which elastically deflects or deforms leg 403 until it is pushed past the protrusion to snap into place into further slot 226B, in this embodiment, formed by the small protrusion. This also provides the user with a tactile and/or audible signal that the connector 400 has snapped into place. A similar further recess can be provided at the other end of the slot 226 to provide a similar locking function and/or tactile and/or audible signal to the user that the connector 400 has been sufficiently withdrawn to remove component 100. These protrusions are indicated as elements 226C and 226D in Figure 50C.

[00186] Throughout the specification and the claims that follow, unless the context requires otherwise, the words “comprise” and “include” and variations such as “comprising” and “including” will be understood to imply the inclusion of a stated integer or group of integers, but not the exclusion of any other integer or group of integers.

[00187] The reference to any prior art in this specification is not, and should not be taken as, an acknowledgement of any form of suggestion that such prior art forms part of the common general

knowledge.

[00188] It will be appreciated by those skilled in the art that the invention is not restricted in its use to the particular application described. Neither is the present invention restricted in its preferred embodiment with regard to the particular elements and/or features described or depicted herein. It will be appreciated that the invention is not limited to the embodiment or embodiments disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the scope of the invention as set forth and defined by the following claims.

CLAIMS

1. A housing for housing at least a portion of a component for connection to a mounting region of an electrical outlet or switch plate, the housing comprising:
 - at least one wall; and
 - at least one non-deflectable retaining surface on at least a portion of the at least one wall for engaging with a sliding connector.
2. A housing as claimed in claim 1 wherein the at least one non-deflectable retaining surface is provided by a recess in the housing.
3. A housing as claimed in claim 1 wherein the at least one non-deflectable retaining surface is provided by a protrusion extending from the at least one wall.
4. A housing as claimed in any one of claims 1 to 3 wherein the at least one non-deflectable retaining surface is provided at a first level of the at least one wall, and a second non-deflectable retaining surface is provided at a second level of the at least one wall.
5. A housing as claimed in claim 3 wherein the housing comprises at least three walls, and wherein the at least one non-deflectable retaining surface is provided at a first level on one of the at least three walls and a second non-deflectable retaining surface is provided at a second level on another of the at least three walls.
6. A housing as claimed in claim 1 further comprising at least one further non-deflectable protrusion extending from the at least one wall at a second level on the at least one wall.
7. A component comprising:
 - the housing as claimed in any one of claims 1 to 6;
 - component parts at least partially housed within the housing; and
 - a component interface for controlling at least one of the component parts.
8. A component as claimed in claim 7 wherein the component is a module.
9. A component as claimed in any one of claims 7 or 8 wherein the component is a switch mechanism.

10. A component as claimed in claim 9 wherein the component interface is a dolly.
11. A component as claimed in claim 9 wherein the interface is a push button.
12. A component as claimed in any one of claims 7 or 8 wherein the component is a charger.
13. A component as claimed in claim 12 wherein the component interface is a Universal Serial Bus (USB) port.
14. A component interface as claimed in any one of claims 7 or 8 wherein the component is a data outlet.
15. A component as claimed in claim 14 wherein the interface is an RJ-45 connector.
16. A component wherein the interface is a wireless receiver or transceiver for receiving wireless signals.
17. A system comprising:
 - An electrical outlet or switch plate comprising a mounting region; and
 - A component connected to the mounting region, the component comprising:
 - at least one wall;
 - at least one retaining surface on at least a portion of the at least one wall;
 - a component interface disposed at one end of the component; and
 - component parts at least partially housed within the housing and controlled by the component interface; wherein

the component is connected to the mounting region via a sliding connector engaging the at least one retaining surface to thereby retain the component to the mounting region.
18. An electrical outlet or switch plate comprising a mounting region for receiving a component, the mounting region comprising at least one aperture or channel for receiving a sliding connector for engagement with a retaining surface of the component to thereby retain the component to the mounting region.
19. A method of connecting a component to an electrical outlet or switch plate, the method comprising:

placing the component at a mounting region of the electrical outlet or switch plate and sliding a sliding connector through a portion of the mounting region to engage a retaining surface of the component to thereby retain the component to the electrical outlet or switch plate.

20. A method as claimed in claim 19 further comprising sliding a second sliding connector through a portion of the mounting region to engage a second retaining surface of the component.
21. A method of connecting a plurality of components to an electrical outlet or switch plate, the method comprising placing the plurality of components at respective mounting regions of the electrical outlet or switch plate and sliding a sliding connector through a portion of the respect mounting regions to engage with a retaining surface of a first of the plurality of components, and with a retaining surface of a second of the plurality of components, thereby retaining the plurality of components to the electrical outlet or switch plate.
22. A method as claimed in claim 21 wherein the number of components is two.
23. A method as claimed in claim 21 wherein the number of components is three.
24. A method as claimed in claim 21 wherein the number of components is four.
25. A method as claimed in claim 21 wherein the number of components is six.
26. A method of disconnecting a component connected to an electrical outlet or switch plate, the method comprising sliding a sliding connector in the electrical outlet or switch plate to disengage from a retaining surface of the component and removing the component from the electrical outlet or switch plate.
27. A method as claimed in claim 26 comprising sliding a second sliding connector in the electrical outlet switch plate to disengage with a second retaining surface of the component prior to removing the component from the electrical outlet or switch plate.
28. A method of disconnecting a plurality of components from an electrical outlet or switch plate, the method comprising sliding a sliding connector in the electrical outlet or switch plate to disengage with a retaining surface of a first of the plurality of components, and

from a retaining surface of a second of the plurality of components, and then removing the plurality of components from the electrical outlet or switch plate.

29. An interface between a mounting region of an electrical outlet and a component, the interface comprising an aperture or channel in the mounting region, having therein a sliding connector, which is engaged with a retaining surface of the component, to thereby retain the component to the mounting region.
30. A sliding connector comprising a tab and at least two legs extending substantially perpendicularly therefrom.
31. A sliding connector as claimed in claim 30 comprising three legs.
32. A sliding connector as claimed in claim 30 comprising four legs.
33. A sliding connector as claimed in claim 30 comprising 5 legs.
34. A sliding connector as claimed in any one of claims 30 to 33 wherein the legs are not of the same length.