

POWER OUTLET DEVICE

FIELD OF THE INVENTION

The present invention relates to a power outlet device and to a switching mean which may for example be incorporated in such a power outlet device.

BACKGROUND OF THE INVENTION

A power outlet device is normally of a kind which has a single electrical lead which can be plugged into a wall socket and provides a box which has a plurality of sockets electrically connected via the lead to an electricity supply. The sockets are normally individually controlled by an on/off switch. An indicator light may also be included for each socket to indicate whether the switch is on or off. A prior art power outlet box is for example showing in Figure 1 and also with reference to our UK patent 2266811, the entire contents of which is hereby incorporated in this specification. This prior art outlet device utilises switches which are self contained units and these are placed intermediate of adjacent sockets. The nature of this type of switch unit is such that electrical contacts of the switch are positioned on each side of the switch lever pivot axis, and makes the orientation of the switch, best suited to having its pivot axis parallel with the elongated direction of the box. This is a particularly desirable orientation where the internal electrode bars which deliver the electricity from the lead to the socket terminals, are made of a sheet metal as this orientation requires little complex folding of the bars.

By placing the switches intermediate of adjacent sockets, the space requirement in the longitudinal direction increases the length of the power outlet device, than where the switches positioned above each respective sockets. However in maintaining the orientation as shown in Figure 1, and because a switch is normally longer than it is wider, such orientation would significantly add to the width of the power outlet device. It is hence desirable for the switches to be positioned such that the pivot axis of each switch button is transverse to the longitudinal direction of the power outlet device where the switches are to be provided above each socket. Such orientation would reduce the demand on the width of the power outlet device. A

configuration of switch has hence needed to be designed since the orientation of the two terminals extending from a self contained switch unit would make the configuration of the electrode bars within the housing more complex, if such switches were positioned to have their pivot axes transverse to the longitudinal direction.

Accordingly it is an object of the present invention to provide a power outlet device and related a switch arrangement which may be of a length reduced than if the switches were placed intermediate of adjacent sockets and yet maintains simple design of electrode layout within the housing of the device, or to provide the public with a useful choice.

It is also an object of the present invention to provide a switch configuration for such or other power devices which will at least provide public with a useful choice.

BRIEF DESCRIPTION OF THE INVENTION

In a first aspect present invention consists in a power outlet device for activating circuits associated with inserted plugs, said power outlet device comprising:

a casing comprising of a base member and an upper member secured to said base member, said upper member including an upper surface having at least two plug receiving regions, each plug receiving region having at least two openings through said upper member for receiving the prongs of one of said plugs,

at least two conductive devices located by and within said casing,

- i) a first conductive device (herein after the “live conductor”) including terminals (herein after “live terminals”) positioned adjacent respective openings of said plug receiving regions, to each be engagable by a live prong of a said plug, and
- ii) the second conductive device (herein after the “neutral conductor”) including terminals (herein after “neutral terminals”) positioned adjacent respective openings of said plug receiving regions to each be engagable by a neutral prong of a said plug

said first conductive device comprises of an elongate feeder electrode bar made of a sheet material and branching electrode bars each branching electrode bar including a said live terminal, each branching electrode bar being in a relationship with said elongate feeder electrode bar wherein a conductive connection between each branching electrode bar and said elongate feeder electrode bar is controlled by a switch

each said switch comprises a toggle plate of a conductive material which is supported in a conductive relationship by one or more upstands extending from said elongate feeder electrode bar to support said toggle plate in a pivotable manner from said elongate feeder electrode bar, said toggle plate movable under a toggle action provided by a switch button movably mounted from said casing, between a first rotational position and a second rotational position wherein in said first rotational position said toggle plate is in a conductive connected relationship with a said branching electrode bar and in said second rotational position said toggle plate is in a non conductive and disconnected relationship with a said branching electrode bar

wherein said toggle plate is pivoted about an axis which is transverse of the longitudinal direction of said elongate feeder electrode bar.

Preferably two of said upstands are provided for supporting each said toggle plate, and each of said two upstands includes a notch in its uppermost edge, each notch to accommodate an axle defining region of a said toggle plate to providing said pivot axis of said toggle plate.

Preferably said elongate feeder electrode bar comprises a base strip, upwardly folded from which are two upstands (one from each longitudinal side of said base strip) for supporting each said toggle plate.

Preferably said base strip is planar and said toggle plates pivot about axes which are parallel to the plane of said base strip.

Preferably said base strip, in plan view is straight.

Preferably the base strip of the elongate feeder electrode bar is positioned to have its major surfaces parallel to the upper surfaces of said casings wherein the switch button is exposed through an opening in the upper surface of the upper member.

Preferably the base strip of the elongate feeder electrode bar is positioned to have its major surfaces perpendicular to the upper surfaces of said casings wherein the switch button is exposed through the side of said casing.

Preferably the region of each said branching electrode to be contacted by said toggle plate when in said first rotational condition is positioned above said base strip with respect to said base member.

Preferably said switch button is movably mounted from the base member of said casing.

Preferably said switch button is slidably mounted from said casing.

Preferably said switch button is pivotably mounted from said casing.

Preferably for each switch the axis of pivot of said switch button is parallel to and vertically above said pivot axis of said toggle plate.

Preferably said upper surface includes an array of plug receiving regions, extending in the longitudinal direction, adjacent which is an array of switch buttons, extending through complementary openings in said upper surface of said upper member, placing a said switch button adjacent to a respective plug receiving region.

Preferably said array of switch buttons is positioned adjacent one of the longitudinal edges of said casing.

Preferably each switch button is supported by a switch support integrally formed with the base member.

Preferably each said switch support comprises of a pair of support members between which a said switch button is located is and dependent from in a pivotable manner.

Preferably each pair of support members extend from said base member, each support member including a hole (whether a through hole or blind hole) with each of which a pivot axle or axles of said switch button can locate and about which said switch button is able to pivot.

Preferably the hole in each of said support members is a through hole and is coaxial with the through hole of the other support member its said pair.

Preferably each branching electrode is made from a sheet material.

Preferably each branching electrode is substantially planar save for the provision of the live terminal.

Preferably each branching electrode is substantially straight, when viewed normal to the planar direction.

Preferably each branching electrode is engaged to said base member such that the major surfaces thereof are parallel to the upper surface of said upper member.

Preferably each plug receiving region has three openings, a third for receiving the neutral prong of a plug, wherein a third conductive device (hereinafter the “earth conductor”) is located by and within said casing and includes terminals (herein after “neutral terminals”) positioned adjacent respective openings of said plug receiving regions to each be engagable by an earth prong of a said plug.

In a second aspect the present invention consists in a switching means for controlling electrical connection between two or more electrical components to be associated with said switching means, said switching means comprising

- a housing,

- a first conductive element of a sheet material in or to be in electrical contact with a first of said electrical components, said first conductive element mounted to said housing,

- a second conductive element in or to be in electrical contact with a second of said electrical components, said second conductive element mounted to said housing,

- a toggle plate of a conductive material,

- wherein said first conductive element has been folded to define a base portion and at least one upstand from said base portion, said upstand providing a pivotable support to said toggle plate in a manner such that said toggle plate is movable about a pivot axis between first and second rotational positions,

- an actuation means to move said toggle plate between said first and second rotational positions, said actuation means including a switch button actuatable by a user and movably mounted to said housing,

- wherein said second conductive element is held by said housing in a relationship to said toggle plate, such that said toggle plate in said first rotational condition is in conductive contact with said second conductive element thereby allowing an electrical connection to be made between said first electrical component and said second electrical component

Preferably said first electrical component is engaged to the base portion of said first conductive element.

Preferably said base portion is securely fixed to said housing.

Preferably said first conductive element has been folded to provide two upstands, each including a notch in its uppermost edge, each notch to accommodate an axle defining region of a said toggle plate to providing said pivot axis of said toggle plate.

Preferably said base portion is planar and the pivot axis of said toggle plate is parallel to the plane of the base portion.

Preferably said base portion, in plan view is straight.

Preferably the base portion is positioned to have its major surfaces parallel to the upper surfaces of said housing at where the switch button is exposed through an opening in the upper surface of the housing.

Preferably the base portion is positioned to have its major surfaces perpendicular to the upper surfaces of said housing wherein the switch button is exposed through a side surface of said casing.

Preferably the region of second electrode to be contacted by said toggle plate when in said first rotational condition is positioned above said base portion.

Preferably said switch button is slidably mounted from said housing.

Preferably said switch button is pivotably mounted from said housing.

Preferably the axis of pivot of said switch button is parallel to and vertically above said axis of rotation of said toggle plate.

Preferably each switch button is supported by a switch support integrally formed with the housing.

Preferably each said switch support comprises of a pair of support members between which said switch button is located and is dependent from in a pivotable manner.

Preferably each pair of support members extend from housing, each include a hole (whether a through hole or blind hole) with each of which a pivot axle or axles of said switch button can locate and about which said switch button is able to pivot.

Preferably the hole in each of said support members is a through hole and is coaxial with the through hole of the other support member of its said pair.

In a further aspect the present invention consists in an electrical connection box providing said housing within which a plurality of said switching means as herein before described.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of a prior art power outlet device,

Figure 2 is a perspective view of the power outlet device of the present invention,

Figure 3 is a plan view of Figure 2 with the upper member of the casing removed,

Figure 4 is a perspective view of part of a power outlet device of the present invention with the upper member of the casing removed showing three socket regions with three accompanying switch arrangements,

Figure 5 is a perspective exploded view of Figure 1,

Figure 6 is a perspective view of two socket arrangements with accompanying switches, showing only the conductive devices (for live, neutral and earth) of the switch arrangement,

Figure 7 is a perspective view of part of the switching means of the present invention,

Figure 8 is a perspective view of part of a switching arrangement in an alternative form,

Figure 9 is a cross-sectional view of the switching arrangement according to the configuration of Figure 7, and

Figure 10 is a side view of part of the live connector in an alternative configuration.

DETAILED DESCRIPTION OF THE INVENTION

With reference to Figure 2, there is shown a perspective view of a power outlet device 1. The configuration shown in Figure 2 has two plug receiving regions 2, 3. The power outlet device of the present invention includes a lead 4 which supplies electricity to the power outlet device. The lead may for example be adapted to be plugged into a wall socket. The power outlet device of the present invention is to provide expansion of the number of sockets that become available for use by electrical appliances from a single wall socket outlet. As shown in Figure 2 the power outlet device has at least two plug receiving regions.

For reducing the length in the longitudinal direction L of the device, it is desirable for the adjacent plug receiving regions (or sockets) to be positioned as close to each other as possible. That which primarily limits the proximity of adjacent plug receiving regions, are the

plugs to be engaged with the power outlet device. The body of such plugs will limit how close together a series of sockets for such plugs can be positioned. With the types of plugs in general use the proximity can be that they are virtually touching. However a switch to control the power to the plug receiving regions can then not be placed intermediate or adjacent plug receiving regions.

Access by a finger of a person to such switches placed intermediate of the plug receiving regions will be severely restricted where the plug receiving regions are placed so close to each other that adjacent plugs are nearly touching each other. In order to improve the access by a finger of a person to a switch placed intermediate of the plug receiving regions, will either require for the plug receiving regions to be spaced further apart than what is necessary to accommodate the plugs adjacent each other (which will add to the length of the power outlet device) or for the switches to be placed elsewhere. The configuration adopted for this invention is where the switches are placed adjacent to each respective plug receiving regions and not intermediate of adjacent plug receiving regions. The form of plugs to be received by the plug receiving regions as shown in Figure 2, commonly have their lead extend from the plug body not from the earth side but from the live/neutral side thereof and hence positioning of the switches proximate most to the earth terminal is appropriate such that the lead from the plug does not interfere with the access to the switch buttons 26.

The power outlet device of the present invention includes a casing 5 having an upper member 6 and base member 7. These are joined along a split plane 8 which is preferably parallel to the upper surface 9 of the upper member 6. An opening for the lead 4 to exit the casing is provided preferably in the sidewall 10 defined by the sides of the substantially trough shaped upper member and base member of the casing. The upper member 9 includes openings at each plug receiving region for receiving the prongs of a plug which will protrude through the openings and into the body of the casing to make contact with the appropriate terminals presented below the openings.

As for example shown in Figure 2, each plug receiving region has three openings, each for receiving the live, neutral and earth prong of a plug. However the casing of the present invention may alternatively be provided to receive plugs with only two prongs (live and neutral) and for such, only two openings per plug receiving region may be provided. Aligned

with and internal of the casing are terminals, complimentary with the openings of the upper member.

Each terminal is to correspond with and receive in a conductive engagement, a prong of a plug. In particular, inside the casing and located by the base member, is a first conductive device or "live conductor" 11 which is capable of delivering electricity from the live wire 12 of the lead 4 to the live terminals 13 below the plug receiving regions as shown on Figure 3.

This live conductor 11 is controlled by a switch 14 for each plug receiving region. Likewise a second conductive device or "neutral conductor" 15 is provided engaged to the base member, to deliver electricity from the neutral wire 16 of the lead 4, to the neutral terminals 17 corresponding to the neutral prongs of a plug below each plug receiving region. Optionally and where an earth connection is to be provided, a third conductive device or "earth conductor" 18 is provided to be located with the base member to provide a conductive connection between the earth wire 19 of the lead 4 to the earth terminals 20 below each plug receiving region. In the configuration as shown in Figure 13, the earth conductor is arranged such that it does not make a connection with each of the live and neutral conductors by being positioned to pass below each of the conductors. Each of the wires may be connected to a respective conductor by fastening means such as for example soldering or by a mechanical fastener such as a machine screw or bolt. Each of the conductive devices is preferably supported by supporting regions of the base which may include location pins 21. The upper member preferably also includes upstands from the inwardly facing side of the upper surface. Such upstands extend towards the base member in a manner so that when the upper and base members are engaged with each other, the upstands locate on top of the conductive members thereby clamping the conductive members to their supports on the base member.

The terminals have been shaped to allow for the prongs of a plug to slidingly engage with the terminals yet receive to some degree a clamping force by the terminals to ensure a electrical contact is made between the prongs and the terminals. A downward clamping by the upstands particularly at the terminals is important since when the plug is extracted from the terminals little or no uplifting and distortion of the conductive devices should be encountered.

Furthermore for simplicity of manufacture and for simplicity of assembly the neutral conductor and earth conductor are made from a single piece. Preferably the single piece is

manufactured by striking a blank from a sheet material thereafter folding the sheet material appropriately to define the conductors.

The live conductor itself is made from several components and it incorporates a switch to control the supply of electricity between the live wire 12 and the live terminals 13.

The live conductor preferably consists of a feeder electrode bar 22 to which the live wire 12 of the lead 4 is attached and a branching electrode 23 for each of the plug receiving regions. The branching electrode incorporate the live terminals 13 preferably disposed at a distal end thereof. Electrical connection between the feeder electrode and each branching electrode is controlled by a switch. The switch consists of a toggle plate 24 which is supported by upstands 25 of the feeder electrode bar 22. The upstands 25 as shown in Figure 5, are preferably integral with the feeder electrode bar and project upwardly at substantially 90 degrees to the general plane of the base of the feeder electrode bar. The feeder electrode bar is preferably of an elongate shape and preferably straight when viewed in plan. It extends substantially parallel to the longitudinal direction L of the casing. It provides the upstands 25 at plug receiving region intervals so that the switches are positioned to locate the switch buttons 26 at plug receiving region intervals and to position these above each of the plug receiving regions.

The upstands 25 provide cradle regions 27 into which axles 28 of the toggle plate 24 can locate. The toggle plate itself is preferably made from a sheet material and defines the axles 28 as protrusions from its generally rectangular plan shape. The upstands 25 position the cradles such that the toggle plate is pivoted about a pivot axis substantially perpendicular to the longitudinal direction of the feeder electrode bar and the casing. The same orientation of the switch buttons 26 with their longitudinal direction parallel with the longitudinal direction of the casing, reduces the demand on the width of the casing by the switch. That is, their pivot axis extending transverse to the longitudinal direction of the feeder electrode bar.

An alternative form of upstand of the elongate feeder bar to support the toggle plate is shown in Figure 8. In this instance, the toggle plate includes and incorporates locating rebates in its perimeter shape which position the toggle plate with an appropriate shaped rebate in the upstand. Again however the pivot axis of the toggle plate is substantially perpendicular to the longitudinal direction L.

The toggle plate being made of a conductive material itself and being supported in a cradle which forms part of the feeder electrode bar, is thereby in electrical connection with the live wire 12 of the lead. The contact point 29 of the toggle plate is able to move from a first rotational position to a second rotational position, corresponding to being (i) in a conductive relationship with the branching electrode and (ii) in a non-conductive and disconnecting relationship with the branching electrode respectively. The branching electrode 23 is positioned above the feeder electrode bar and intermediate of which the contact point 29 of the toggle plate can rotate between its first and second rotational position. In the first rotational position the contact point 29 makes contact with the underside of the branching electrode. In the most preferred form the branching electrode is preferably also made of a sheet material however this may not be necessarily be so. The orientation of the plane of the branching electrode may be vertical as opposed to horizontal (when viewed in the orientation showing Figure 5). That is, the orientation could be in the same vertical direction as the orientation of the plain of the electrode 18. With the orientation of the plane of the base of the elongate feeder electrode bar being horizontal (i.e. parallel with the upper surface of the upper member) it provides a convenient orientation for the presentation of the upstands to support the toggle plates for each of the switches. The elongate feeder electrode bar is also able to assume a substantially straight (in plan view) configuration and is easily assembled onto the base member, thereafter conveniently presenting the up stands for the toggle plates to be located thereon.

The movement of the toggle plates between first and the second rotational positions is controlled by a user who is able to actuate the switch button 26 with his/her finger. The switch button is of a common type used in toggle switches and includes a biasing means (preferably a helical spring) and actuation leg 30 which acts on the upper surface of the toggle plate 24. The switch button itself is pivoted about a pivot axis defined by axles 31 and the positioning of the axles is such that the actuation leg 30 is capable of moving along the top surface of the toggle plate from side to side, of the pivot axis of the toggle plate. Consequently the force applied by the actuation leg on the upper surface of the toggle plate will cause the toggle plate to move between its first and second rotational positions as the actuation leg moves from one side to the other side of the pivot axis of the toggle plate.

The orientation of the elongate feeder electrode bar may in an alternative form be rotated through 90 degrees, yet still extend parallel to the longitudinal direction of the casing. In this rotational condition, the general plane of the elongate feeder bar is substantially vertical and the openings through the casing where the switch buttons 26 extend through (to be accessible by a user of the device) are preferably provided through the side of the wall of the casing. In this configuration the branching electrodes include a bend at its distal end opposite to the terminals 13 which positions a portion of the branching electrodes in a vertical condition, such portion being provided in this vertical condition for engagement with the contacts 29 of the toggle plate. Figure 10 shows the live conductor including its switching means in such a configuration.

As the base and upper members of the casing are preferably made by injection molding, it is important to keep in mind the orientation of the components such that a mold release can be conveniently achieved yet still provide all the necessary support/clamping features and location features for the subsequently mounted components to the casing.

As can be seen in Figure 5, the switch buttons 26 are located with mountings 34 which include apertures 35 into which the axles 31 of the switch button can locate. A click-fit of the switch buttons with the mounts is preferable. In this arrangement no mold undercuts in the molding need to be provided. A positive location of the switch buttons is also provided in that the axles 31 are able to securely locate into the apertures 35 of the mountings 34.

As a post molding step after the molding of base member, the apertures 35 will need to be drilled through the mountings 34. A further advantage that is provided by having the orientation of the switch buttons such that the pivot axes are perpendicular to the longitudinal direction, is that such drilling can be easily achieved from the side direction of the base member. Convenient access to each support of the mountings 34 can be achieved from the side. Were the orientation of the pivot axes parallel to the longitudinal direction, limited space intermediate of adjacent switch mounts would make the drilling of the apertures of the mountings 34 more difficult.

The switching means of the outlet device of the present invention may also have application in other areas. The folded sheet metal arrangement of the first conductive element of the description is a simple way of providing a support to the toggle plate. The first

conductive element may consist of one or more up stands to provide one or more regions for supporting of one or more respective toggle plates. With reference to Figure 7, the first conductive element 50 has been folded to define a base portion 51 and upstands 52, the upstands providing location regions 53 with which pivot axles 54 of the toggle plate 55 can locate and be supported by the upstands in a pivotable manner. The toggle plate is able to move between its first and second rotational positions by pivoting about the pivot axis of the axles 54. The first conductive element is preferably supported by a housing of some kind to present a switch button therefrom to actuate the toggle plate and move it between its first and second rotational positions as and when required to make connection between the first conductive element and a second conductive element for the control of the flow of electricity therebetween. Whilst we have mentioned that in the preferred form the live conductor is the conductor which incorporates the switch, in an alternative, it may be the neutral conductor or both conductors. The plug receiving regions are preferably of a kind to receive 3 pinned plugs having the live and neutral pins proximate to one major side and the earth pin proximate to the other major side of the generally rectangular shaped device. The orientation may alternatively be rotated by 90 degrees placing the neutral plug proximate one major side, the live plug proximate the other major side and the earth plug intermediate. The rebates of the upstands where the toggle plate axles locate may include an upstand which presents a pin point on top of which the toggle plate locates. This will aid in ease of pivoting of the toggle plate. The live wire of the lead may be connected to the feeder bar via a lug which is attached to the feeder bar. The lug as for example shown in figure 6 is preferably fixed (by for example riveting) to the feeder bar, which itself has been folded to encompass at least part of three sides of the cube shaped lug. The lug includes a blind or through hole into which a wire can extend and includes a screw for tightening onto the wire to thereby clamp the wire to the lug.

WHAT WE CLAIM IS:

1. A power outlet device for activating circuits associated with inserted plugs, said power outlet device comprising:

a casing comprising of a base member and an upper member secured to said base member, said upper member including an upper surface having at least two plug receiving regions, each plug receiving region having at least two openings through said upper member for receiving the prongs of one of said plugs,

at least two conductive devices located by and within said casing,

i) a first conductive device (herein after the “live conductor”) including terminals (herein after “live terminals”) positioned adjacent respective openings of said plug receiving regions, to each be engagable by a live prong of a said plug, and

ii) the second conductive device (herein after the “neutral conductor”) including terminals (herein after “neutral terminals”) positioned adjacent respective openings of said plug receiving regions to each be engagable by a neutral prong of a said plug

said first conductive device comprises of an elongate feeder electrode bar made of a sheet material and branching electrode bars each branching electrode bar including a said live terminal, each branching electrode bar being in a relationship with said elongate feeder electrode bar wherein a conductive connection between each branching electrode bar and said elongate feeder electrode bar is controlled by a switch

each said switch comprises a toggle plate of a conductive material which is supported in a conductive relationship by one or more upstands extending from said elongate feeder electrode bar to support said toggle plate in a pivotable manner from said elongate feeder electrode bar, said toggle plate movable under a toggle action provided by a switch button movably mounted from said casing, between a first rotational position and a second rotational position wherein in said first rotational position said toggle plate is in a conductive connected relationship with a said branching electrode bar and in said second rotational position said toggle plate is in a non conductive and disconnected relationship with a said branching electrode bar

wherein said toggle plate is pivoted about an axis which is transverse of the longitudinal direction of said elongate feeder electrode bar.

2. A power outlet device as claimed in claim 1 wherein two of said upstands are provided for supporting each said toggle plate, and each of said two upstands includes a notch in its uppermost edge, each notch to accommodate an axle defining region of a said toggle plate to providing said pivot axis of said toggle plate.
3. A power outlet device as claimed in claims 1 or 2 wherein said elongate feeder electrode bar comprises a base strip, upwardly folded from which are two upstands (one from each longitudinal side of said base strip) for supporting each said toggle plate.
4. A power outlet device as claimed in claim 3 wherein said base strip is planar and said toggle plates pivot about axes which are parallel to the plane of said base strip.
5. A power outlet device as claimed in claims 3 or 4 wherein said base strip, in plan view is straight.
6. A power outlet device as claimed in any one of claims 3 to 5 wherein the base strip of the elongate feeder electrode bar is positioned to have its major surfaces parallel to the upper surfaces of said casings wherein the switch button is exposed through an opening in the upper surface of the upper member.
7. A power outlet device as claimed in any one of claims 3 to 5 wherein the base strip of the elongate feeder electrode bar is positioned to have its major surfaces perpendicular to the upper surfaces of said casings wherein the switch button is exposed through the side of said casing.
8. A power outlet device as claimed in any one of claims 3 to 7 wherein the region of each said branching electrode to be contacted by said toggle plate when in said first rotational condition is positioned above said base strip with respect to said base member.
9. A power outlet device as claimed in any one of claims 1 to 8 wherein said switch button is movably mounted from the base member of said casing.
10. A power outlet device as claimed in any one of claims 1 to 9 wherein said switch button is slidably mounted from said casing.
11. A power outlet device as claimed in any one of claims 1 to 9 wherein said switch button is pivotably mounted from said casing.

12. A power outlet device as claimed in any one of claim 11 wherein for each switch the axis of pivot of said switch button is parallel to and vertically above said pivot axis of said toggle plate.
13. A power outlet device as claimed in any one of claims 1 to 12 wherein said upper surface includes an array of plug receiving regions, extending in the longitudinal direction, adjacent which is an array of switch buttons, extending through complementary openings in said upper surface of said upper member, placing a said switch button adjacent to a respective plug receiving region.
14. A power outlet device as claimed in claim 13 wherein said array of switch buttons is positioned adjacent one of the longitudinal edges of said casing.
15. A power outlet device as claimed in any one of claims 1 to 14 wherein each switch button is supported by a switch support integrally formed with the base member.
16. A power outlet device as claimed in claim 15 wherein each said switch support comprises of a pair of support members between which a said switch button is located is and dependent from in a pivotable manner.
17. A power outlet device as claimed in claim 16 wherein each pair of support members extend from said base member, each support member including a hole (whether a through hole or blind hole) with each of which a pivot axle or axles of said switch button can locate and about which said switch button is able to pivot.
18. A power outlet device as claimed in claim 17 wherein the hole in each of said support members is a through hole and is coaxial with the through hole of the other support member its said pair.
19. A power outlet device as claimed in any one of claims 1 to 18 wherein each branching electrode is made from a sheet material.
20. A power outlet device as claimed in any one of claims 1 to 19 wherein each branching electrode is substantially planar save for the provision of the live terminal.
21. A power outlet device as claimed in claim 19 wherein each branching electrode is substantially straight, when viewed normal to the planar direction.
22. A power outlet device as claimed in claim 19 wherein each branching electrode is engaged to said base member such that the major surfaces thereof are parallel to the upper surface of said upper member.

23. A power outlet device as claimed in any one of claims 1 to 22 wherein each plug receiving region has three openings, a third for receiving the neutral prong of a plug, wherein a third conductive device (hereinafter the “earth conductor”) is located by and within said casing and includes terminals (herein after “neutral terminals”) positioned adjacent respective openings of said plug receiving regions to each be engagable by an earth prong of a said plug.

24. A switching means for controlling electrical connection between two or more electrical components to be associated with said switching means, said switching means comprising

a housing,

a first conductive element of a sheet material in or to be in electrical contact with a first of said electrical components, said first conductive element mounted to said housing,

a second conductive element in or to be in electrical contact with a second of said electrical components, said second conductive element mounted to said housing,

a toggle plate of a conductive material,

wherein said first conductive element has been folded to define a base portion and at least one upstand from said base portion, said upstand providing a pivotable support to said toggle plate in a manner such that said toggle plate is movable about a pivot axis between first and second rotational positions,

an actuation means to move said toggle plate between said first and second rotational positions, said actuation means including a switch button actuable by a user and movably mounted to said housing,

wherein said second conductive element is held by said housing in a relationship to said toggle plate, such that said toggle plate in said first rotational condition is in conductive contact with said second conductive element thereby allowing an electrical connection to be made between said first electrical component and said second electrical component

25. A switching means as claimed in claim 24 wherein said first electrical component is engaged to the base portion of said first conductive element.

26. A switching means as claimed in claims 24 or 25 wherein said base portion is securely fixed to said housing.

27. A switching means as claimed in any one of claims 24 to 26 wherein said first conductive element has been folded to provide two upstands, each including a notch in its

uppermost edge, each notch to accommodate an axle defining region of a said toggle plate to providing said pivot axis of said toggle plate.

28. A switching means as claimed in any one of claims 24 to 27 wherein said base portion is planar and the pivot axis of said toggle plate is parallel to the plane of the base portion.

29. A switching means as claimed in any one of claims 24 to 28 wherein said base portion, in plan view is straight.

30. A switching means as claimed in claims 28 or 29 wherein the base portion is positioned to have its major surfaces parallel to the upper surfaces of said housing at where the switch button is exposed through an opening in the upper surface of the housing.

31. A switching means as claimed in claims 28 or 29 wherein the base portion is positioned to have its major surfaces perpendicular to the upper surfaces of said housing wherein the switch button is exposed through a side surface of said casing.

32. A switching means as claimed in any one of claims 24 to 31 wherein the region of second electrode to be contacted by said toggle plate when in said first rotational condition is positioned above said base portion.

33. A switching means as claimed in any one of claims 24 to 32 wherein said switch button is slidably mounted from said housing.

34. A switching means as claimed in any one of claims 24 to 33 wherein said switch button is pivotably mounted from said housing.

35. A switching means as claimed in claim 34 wherein the axis of pivot of said switch button is parallel to and vertically above said axis of rotation of said toggle plate.

36. A switching means as claimed in any one of claims 24 to 35 wherein each switch button is supported by a switch support integrally formed with the housing.

37. A switching means as claimed in claim 36 wherein each said switch support comprises of a pair of support members between which said switch button is located and is dependent from in a pivotable manner.

38. A switching means as claimed in claim 37 wherein each pair of support members extend from housing, each include a hole (whether a through hole or blind hole) with each of which a pivot axle or axles of said switch button can locate and about which said switch button is able to pivot.

39. A switching means as claimed in claim 38 wherein the hole in each of said support members is a through hole and is coaxial with the through hole of the other support member of its said pair.
40. A plurality of switching means as claimed in any one of claims 24 to 39 engaged to each other by a single unifying said base region.
41. An electrical connection box providing said housing within which a plurality of said switching means of any one of claims 24 to 40 are incorporated.