

APPARATUS FOR DISTRIBUTING ELECTRICAL POWER

TECHNICAL FIELD

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[001] This invention discloses an apparatus for distributing electrical power from a mains supply source to multiple appliances connected thereto via sockets or power outlets provided with the apparatus. It is particularly concerned with tapping off subsidiary electricity power from the domestic mains supply to multiple consumer appliances connected thereto in a safe manner in terms of load and leakage.

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BACKGROUND ART

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[002] Electricity supplied as alternating current (AC) power supply to premises are typically supplied in predetermined ratings such as 30A, 40A or 60A for domestic premises depending on the consumption demand or size of the premises. While the high gauge wires from the distribution board of the premise may be rated to carry maximum load of between 20A to 40A, beyond the power outlet points such as a wall socket the rating is typically reduced to 13A since it is not known what sort of electrical conduit or wires tapping off the socket would be used by the consumer and hence 13A would be safe for most appliances if a plug for a single appliance is plugged into the socket.

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[003] In common practice, however, a single socket may serve multiple appliances with an extension gang of sockets via a single plug inserted into the socket. This may be worsened by the construction of some inferior extension
5 gangs in which the sockets' electrical points inside the gang housing are connected in series by wires of even smaller gauges such as that disclosed by U.S. Patent Application No. 2007/17856 (Schriefer) in as late as August 2007. As the plug's electrical conduit to the extension gang may be a cord which gauge may typically be that of a single appliance, and that multiple appliances plugged into
10 the extension gang may be used simultaneously, the load may therefore exceed the rated 13A thereby causing overloading of the cord which may overheat, melt or burn as a result.

[004] To mitigate the risk of overloading of serially connected wires of the gang
15 sockets, some sockets extension gang provides for parallel bus bars or strips of electrical conductors running through the gang from which each of the extension sockets may tap off power therefrom such as that shown in British Patent No. GB 2,375657 (Atom Technologies). It should be noted however that the load would still be limited by the cord by which power is tapped off the mains socket via the
20 plug (as shown *inter alia* in Fig. 3 of this prior art).

[005] It would be advantageous to solve this last "weak link" of cords by enabling the bus bar or electrical conductor strips to be connected directed to the power points. To this end the housing for such extension sockets or tap off

distribution must be enabled for such connection and mounting over the mains power supply point. One such extension apparatus available in the market is Eubiq's patented GSS system wherein a single track is used for enclosing live (L), earth (E) and neutral (N) lines. The L and N lines are exposed but separated by space at the opposing sides of a single wide track encompassing all the L, E and N lines. Tap off supply is achieved by providing novel plug with pins that would come into contact with the respective L and N lines by first plugging into the middle of the track to contact E first before the plug is turned to enable the L and N pins to contact the respective L and N lines.

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[006] The disadvantages of this apparatus includes having the L and N lines exposed throughout the track and separated by space (each at top and bottom end of the track cross section) rather than insulatively encased. There is also no predetermined number or positions of tap offs so a user may insert as many appliances' plugs into the groove or track as the entire track housing may accommodate. Thus, there is still a lack of load control and the danger of overloading persist in this apparatus. Moreover, the lack of predetermined positions and the nature of the slidable track means the tap-off units or plugs may be slidably moved along the track. If the appliance is in use or current is flowing such movement between electrical contacting surfaces will result in arcing and risk of the sparks initiating a fire.

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SUMMARY OF DISCLOSURE

[007] Our invention endeavours to avoid the aforesaid disadvantages by eliminating any cables or cords in our electrical supply so that all electrical
5 conducting elements are comprised of strips of conductor tracks so that the load that may be tapped off may be maximised without the attendant overloading problem of small gauge wires. To avoid the problem of electrical arc occurring when electrical contact surfaces move against each other, we have provided predetermined points in our apparatus whereby power may be tapped off. The
10 predetermined points also result in a predetermined maximum number of tap off points that may be provided on our apparatus, thus avoiding overloading due to having unregulated number of tap off sockets.

[008] In very brief terms, our apparatus comprises of 3 main components
15 namely, an elongate housing for the electrical conducting tracks, a face plate panel acting as an interfacing member between the elongate housing and a power tap off device. Optionally, blank face panel member and a joint assembly are provided for respective regulating the number of tap off points and for end-to-end joining of two or more of our apparatuses.

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[009] In a basic embodiment, the elongate housing encloses electrical conducting elements or tracks running parallel through the housing, such that each track is insulated from each other by the polymeric materials and features of the housing.

[010] The face plate panel provides access to the electrical conducting tracks of the elongate housing via aperture on said face plate panel corresponding to each of said electrical conductor track. The aperture may preferably be regulated by a shutter biased to slidably close the apertures from the inside of the face plate panel, and which may be opened with the insertion of an object into the aperture where a translational surface of the shutter. Hatch cover may be provided. Additional non-conducting apertures may be provided for mounting and latching means of a power supply tap off device.

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[011] The device for tapping off electrical power supply from an elongate housing comprises of conductor elements provided as pins which may be slidably inserted into the electrical conducting tracks, and whereby the pins are electrically connected to another side of said device as a power outlet or socket.

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[012] Optional features such as latching means and joint assembly for interconnecting two apparatus are also disclosed.

20 LIST OF ACCOMPANYING DRAWINGS

[013] Our apparatus may be better understood in the following when a specific embodiment is described in detailed in a non-limiting manner with reference to the following drawing in which:

[014] FIGURE 1A and FIGURE 1B show a principal component of our apparatus, which is an elongate housing enclosing electrical conducting tracks running parallel therethrough;

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[015] FIGURE 2 depicts another component of our apparatus, which is the face plate panel alternatingly disposed with blank face panel – a plurality thereof is shown either modularly connected or integrally moulded;

10 [016] FIGURE 3A and FIGURE 3B illustrate an embodiment of the face plate panel with hatch opened at alternating hinge positions, i.e. respectively at lower and upper edges;

[017] FIGURE 4 discloses a cross-sectional view of the elongate housing
15 mounted with face plate panel with hatch in close position;

[018] FIGURE 5 shows a shutter part of the face plate panel (without the latter) showing its mounting and shuttering movement over the elongate housing's tracks;

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[019] FIGURE 6A depicts a third component of our apparatus, which is a device for tapping off power supply in side view, and FIGURE 6B shows a device poised to be interfaced to elongate housing at an opened face plate panel;

[020] FIGURES 7A, 7B, 7C and 7D illustrate in sequence the interfacing of a power tap-off device onto an elongate housing through a face plate panel;

[021] FIGURES 8A and 8B disclose in detail the latching and unlatching of the pins of the tap-off device with respect to the face plate panel's shutter; and

[022] FIGURES 9A, 9B, 9C and 9D show in series a joint assembly for joining the ends of two elongate housing; and

[023] FIGURE 10 shows a perspective view of a completely assembled and fully tapped configuration of our apparatus comprising a plurality of tap off devices mounted on all available face plate panel.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[024] The apparatus of our invention comprises of 3 main components, i.e. (i) an elongate housing (10) where electrical conducting tracks are insulatively encased, (ii) a face plate panel (30) acting as an interfacing member between the elongate housing and (iii) a power tap off device (50). The elongate housing (10), as shown in FIGURE 1A, encloses therewithin a plurality of electrical conducting elements running parallel through the housing. The electrical conducting elements comprises at least an electrically conducting track for each of the live (L), earth (E)

and neutral (N) (5b, 6b, 7b) for the conduction of AC power from a main power supply source such as a wall outlet.

[025] The tracks are preferably made of good electrical conducting metal such as copper and having a profile of U-shape cross-section having a neck and wide-tapered opening for securing contact of pins inserted into the track. As shown in FIGURE 1B, each of these L, E and N tracks are preferable soldered and spot-welded to corresponding copper blocks (15, 16, 17) at each end of the elongate housing (10) to securely retain the tracks in the housing. One of the ends' copper block may be used as terminal ends to establish electrical connection with the corresponding power lines at a mains power outlet.

[026] The elongate housing itself is preferably an integrally moulded polymeric material with very good insulation properties and tracks (5b, 6b, 7b) may therefore be disposed in the housing insulated from each other. Although in the drawings may show that positive features such as walls (8) are provided as protruding integrally from the housing base (12) to insulatively separate the tracks, negative features may also be presented in an inverse sense that parallel grooves (5c, 6c, 7c) are provided for the tracks where the housing base (12) is sufficiently thick.

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[027] FIGURE 2 shows the second main component of our apparatus, which is a face plate panel (30) which has features providing and regulating access to the electrical conducting tracks (5b, 6b, 7b) wherein the full complement of a plurality of face plate panels (30) and blank face panels (32) is shown either modularly

connected or integrally moulded is illustrated. The face plate panel provides access via its apertures (5d, 6d, 7d) corresponding to each of the tracks (5b, 6b, 7b). Preferably, the access is substantially incidental to the plane of mutually parallel electrical conducting tracks (5b, 6b, 7b).

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[028] When not in use, the apertures of the face plate panel (30) should be covered up to avoid exposing the electrical conducting tracks (5b, 6b, 7b). This covering up may be provided by a hatch (34) which may be flexibly provided with snap-in tongue-in-groove type of hinge at both its lower and upper edges as shown in FIGURE 3A and FIGURE 3B which respectively illustrate of a hatch
10 opened at alternating hinge positions, i.e. respectively at lower and upper edges. FIGURE 4 discloses a cross-sectional view of the elongate housing mounted with face plate panel with the hatch in close position.

15 [029] An important member of the face plate panel is shown in FIGURE 5 as a shutter (4) which is shown detached from the inside of the face plate panel (30). Our shutter (4) works in principle the same as convention shutters behind socket, i.e. upon insertion of a leading pin against a translational surface (shown as 4a in FIG. 4), the shutter would be pushed downward against biasing springs (38) so
20 that the apertures (5d, 6d, 7d) are opened just before the rest of the pins are inserted through the apertures. FIG. 5's shutter also show holding pins (36) for retaining the shutter in a limited sliding movement.

[030] In a preferred embodiment, further apertures are preferably provided outflanking the original or existing apertures (5d, 6d, 7d) such as above and below the 3 existing apertures for which purpose will be further described in respect of the third component of our apparatus, i.e. a device for tapping power off the tracks
5 (5b, 6b, 7b) below. Suffice to say here that these additional apertures (3d, 10d) are for non-conducting pins to be inserted through the apertures and to secure the device onto the face plate panel.

[031] To space out the points of tapping off power and to predetermine the
10 maximum number of tap off points, and thus predetermine the maximum load, a predetermined number of face plate panels (30) may be spread over the length of the elongate housing (10) and the space between the face plate panels (30) be covered by blank face panels (32). Besides such modular arrangement, a plurality of face plate panels and blank face panels alternating to each other may be integrally
15 moulded as a single piece of face panel unit corresponding to the length of the elongate housing (10).

[032] A third main component of our apparatus is a device for tapping off electrical power supply from the elongate housing (10) wherein conductor elements
20 are provided on said device's side interfacing said elongate housing such that these elements may be slidably inserted into said electrical conducting tracks and connected to another side of said device as a power outlet or socket as shown in FIGURE 6A. FIGURE 6B shows a device (50) poised to be interfaced to elongate housing at an opened face plate panel. The device (50) is provided with conductor elements

which may preferably be pins (5a, 6a, 7a) correspondingly to said L, E and N electrically conducting tracks (5b, 6b, 7b). Preferably, the pins are connected to the power outlet side of the device which socket layout conforms to an industry standard socket layout. A switch may be provided for each tap-off device for control purposes.

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[033] Preferably, the tap-off device's (50) pins (5a, 6a, 7a) are insertable into and slidably along the corresponding electrical conducting tracks (5b, 6b, 7b) through corresponding apertures of a face plate panel. The insertion through a face plate panel is shown in sequence in FIGURES 7A, 7B, 7C and 7D. As suggested in
10 providing additional apertures to the face plate panel (30) described briefly above, the tap-off device (50) may be advantageously provided with additional pins for opening the shutter (4) and securely mounting by latching means thereunto. FIGURES 8A and 8B disclose in detail the latching and unlatching of the pins of the tap-off device with respect to the face plate panel's shutter.

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[034] As explained above, these non-conducting pins or protuberances (shown as 3a, 10a) are preferably provided outflanking the conducting pins thereby providing a balanced and secured latching of the device (50) onto the face plate panel (30) such that all the pins – conducting pins (5a, 6a, 7a) and latching pins
20 (3a, 10a) are disposed in a linear arrangement with the conducting pin (5a, 6a, 7a) in between the pair of latching pins (3a, 10a). One of the latching pins, shown in the drawings as the top one (3a) may be provided a little longer so that it may function as a leading pin whereby upon inserting into the corresponding aperture (3d), this pin will reach the shutter first and upon contacting a translational

surface(4a), push the shutter down to open the other apertures. A release button (11) may be provided to release the latch of the other, i.e. lower latching pin (10a).

[035] An optional component of our apparatus is also described herein, i.e. a joint assembly whereby end-to-end joining of two elongate housing may be achieved safely and securely as shown in FIGURES 9A, 9B, 9C and 9D in series illustrating how the joint assembly may join the ends of two elongate housing. The joint assembly preferably comprises of an electrically insulative polymeric edge joint member (62) profiled to provided end-to-end joining between said two elongate housing such that the respective electrical conductor tracks are aligned. The polymeric edge joint member (62) preferably serves to provide 2 features, namely, as insulative underlay in place of the housing base (12) at the joint, and as insulative interlay between respective electrical conductor tracking space in place of walls (8) protruding integrally from the housing base (12) at the joint.

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[036] Electrically conductive connectors of suitable lengths are then insertable into the tracks and retained therein to connect respective ends of said electrical conducting tracks of said two adjoining elongate housings. These connectors may preferably be copper blocks of suitable dimensions so that they may be inserted snugly to link the two adjoining ends of the tracks. Once these connections are completed, a cover and screw retaining means may be further provided to protectively cover the joined ends of two adjoining and abutting ends of two elongate housing.

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[037] FIGURE 10 shows a perspective view of a completely assembled and fully tapped configuration of our apparatus comprising a plurality of tap off devices mounted on all available face plate panel.

5 [038] Apart from the aforesaid specific embodiments, a person having ordinary skill in the art would be able to modify many of the aforesaid features or configuration without departing from the principle of conducting and tapping electricity of our invention as described herein. For example, a main switch to the apparatus maybe provided so that all the tap off devices distribution may be
10 controlled by this main switch. Another modification would be adapting the number and configuration of the electrical conducting tracks for a 3-phase domestic run. These and many other variations, modifications, equivalents and alternatives are to be considered as falling within the principle and concept of our invention as defined in the following claims.

CLAIMS

1. An elongate housing (10) for enclosing electrical conducting elements running parallel therethrough comprising:
 - 5 a plurality of electrically conducting tracks, with at least one electrically conducting track for each of live (L), earth (E) and neutral (N) (5b, 6b, 7b) conduction of an AC power supply source, wherein the plurality of tracks are arranged in a plane, with each of said tracks having a U-shape cross-section and being capable of slidably receiving and
10 maintaining electrical contact with a conductor element for tapping off distribution of electricity therefrom, and with each track being disposed in the housing (10) insulatively from each other.
2. The elongate housing (10) according to Claim 1 wherein each electrically
15 conducting track (5b, 6b, 7b) is encased in complementary parallel grooves (5c, 6c, 7c) in a sufficiently thick housing base (12).
3. The elongate housing (10) according to Claim 1 wherein each electrically
20 conducting track (5b, 6b, 7b) is encased in the housing (10) insulatively from each other by walls (8) protruding integrally from housing base (12) in between each of said track.
4. A face plate panel for providing access incidental to a plane of mutually parallel
25 electrical conducting tracks disposed in an elongate housing, including at least a U-shape cross-section electrically conducting track for each of live (L), earth (E) and neutral (N) (5b, 6b, 7b) conduction of an AC power supply source, wherein access is provided via an aperture on said face plate panel corresponding to each of said electrical conducting track.
- 30 5. The face plate panel according to Claim 4 further providing a shutter regulating access to said electrical conducting tracks wherein the shutter is biased to slidably close the apertures from the inside of the face plate panel.
6. The face plate panel according to Claim 5 wherein the shutter is biased
35 upwardly to slidably close the apertures and predisposed to slide downwardly with

insertion of an object incidental into at least an aperture urging a translational surface on said shutter.

5 7. The face plate panel according to Claim 4 wherein a hatch is provided to cover over said apertures.

8. The face plate panel according to Claim 7 wherein the hatch is hinged at any one of its top or bottom edge to said face plate panel.

10 9. The face plate panel according to Claim 4 wherein the apertures for the electrical conductor tracks in plane are outflanked by at least a mounting aperture at each end, said mounting apertures disposed for mounting means of a device for drawing electrical power supply from said face plate panel to be inserted and mounted securely onto said face plate panel.

15 10. A plurality of face plate panels according to any one of Claims 4 to 9 provided alternately with a plurality of blank face panels covering substantially over the length of the elongate housing.

20 11. The plurality of face plate panels and blank face panels according to Claim 10 which are integrally moulded as a single piece of face panel unit.

12. The plurality of face plate panels and blank face panels according to Claim 10 which are of modular sizes and capable of joining end to end to cover substantially the
25 length of the elongate housing.

13. A device for tapping off electrical power supply from an elongate housing having U-shape cross-section electrical conducting tracks arranged in a plane and running in parallel through said elongate housing, the device comprising:

30 conductor elements arranged on an interfacing side of the device, the interfacing side being for interfacing said elongate housing;

wherein said conductor elements are disposed to be slidably inserted into said electrical conducting tracks, with each of said conductor elements being electrically connected to a power outlet side of said device, the power
35 outlet side being configured as a power outlet or socket.

14. The device according to Claim 13 wherein:

the elongate housing comprises electrical conducting tracks connected to each of live (L), earth (E) and neutral (N) points of an AC power supply;

5 the conductor elements of the device are provided as pins (5a, 6a, 7a) correspondingly to said L, E and N electrically conducting tracks;

said pins are connected to the power outlet side of the device; with the power outlet or socket of the power outlet side having a socket layout that conforms to an industry standard socket layout.

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15. The device according to Claim 14 wherein the pins (5a, 6a, 7a) are insertable into and slidably along the corresponding electrical conducting tracks (5b, 6b, 7b) through corresponding apertures of a face plate panel.

15 16. The device according to any one of Claims 14 -15 wherein mounting means are provided for securely mounting the device onto at least one of the elongate housing or face plate panel which is provided with additional aperture corresponding to each of the mounting means.

20 17. The device according to Claim 16 wherein the mounting means comprises a pair of protuberances (3a, 10a) provided on the interfacing side with the housing and/or face plate panel and disposed outflanking any of said pins therewithin, and wherein said housing and/or face plate panel are provided with corresponding apertures for each of said protuberances (3a, 10a).

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18. The device according to Claim 17 wherein the pair of protuberances (3a, 10a) are provided in a linear disposition enclosing the electrical conducting elements.

19. The device according to Claim 17 wherein the pair of protuberances (3a, 10a)
30 are provided with latching means for securing mounting said device onto at least one of the elongate housing or face plate panel.

20. The device according to Claim 17 wherein one of the protuberances is provided in the form of a leading pin (3a) which is longer than the other protuberance (10a) and
35 pins (5a, 6a, 7a), wherein when inserting the device through the face plate panel, said

leading pin (3a) reaches first into its corresponding aperture and pushes a shutter to open all the apertures.

21. The device according to Claim 19 wherein the latching means is released by actuating a release button.

22. A joint assembly for joining end-to-end of two elongate housing enclosed with a plurality of parallel electrical conducting tracks comprising at least a U-shape cross-section electrical conductor track for each of live (L), earth (E) and neutral (N) (5b, 6b, 7b) conduction of an AC power supply source, the plurality of tracks being arranged in a plane, said joint assembly comprising:

- an electrically insulative polymeric edge joint member profiled to provided end-to-end joining between said two elongate housing such that
 - the respective electrical conductor tracks are aligned;
 - insulative underlay is provided in place of the housing base at the joint;
 - insulative interlay is provided between respective conductor tracking space in place of walls protruding integrally from the housing base at the joint; and
- electrically conductive connectors of suitable lengths insertable into the U-shape cross-section tracks and retained therein to connect respective ends of said electrical conducting tracks of said two adjoining elongate housings.

23. The joint assembly according to Claim 22 wherein a cover and screw retaining means are further provided to protectively cover the joined ends of two adjoining and abutting ends of two elongate housing.

24. The joint assembly according to Claim 22 configured with a switch to regulate power supply from a mains supply to the elongate housing's electrically conducting tracks.

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25. An apparatus for distributing electricity from a mains power supply comprising at least one or combination of;

- an elongate housing according to any one of Claims 1-3;
- a face plate panel, and optionally blank face panel, according to any one of Claims 4-12;

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- a device for tapping off electricity power from said elongate housing according to any one of Claims 13-21; and optionally
- a joint assembly according to any one of Claims 22— 24.

5 26. An apparatus for distributing electricity from a mains power supply comprising at least one or combination of:

 an elongate housing comprising a plurality of tracks (5b, 6b, 7b) arranged in a plane and running parallel within the housing, the tracks comprising at least an electrically conducting track for each of live (L), earth (E) and neutral (N) conduction of
10 an AC power supply source, each said track being capable of slidably receiving and maintaining electrical contact with a conductor element for tapping off distribution of electricity therefrom; and being disposed in the housing (10) insulatively from each other;

 a face plate panel for providing access incidental to the plane of parallel
15 electrical conducting tracks, wherein access is provided via aperture on said face plate panel corresponding to each of said electrical conducting tracks, and

 a device for tapping off electrical power supply from the elongate housing, the device including conductor elements on an interfacing side, said conductor elements being disposed to be slidably inserted into said electrical conducting tracks, and each
20 of said conductor elements being electrically connected to another side of said device configured to be a power outlet or socket.

27. The apparatus according to Claim 26 wherein each electrically conducting track (5b, 6b, 7b) is encased in complementary parallel grooves (5c, 6c, 7c) in a sufficiently
25 thick housing base (12).

28. The apparatus according to Claim 26 wherein each electrically conducting track (5b, 6b, 7b) is encased in the housing (10) insulatively from each other by walls (8) protruding integrally from housing base (12) in between each of said track.

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29. The apparatus according to any one of Claims 26 – 28 wherein the face plate further provides a shutter regulating access to said electrical conducting tracks wherein the shutter is biased to slidably close the apertures from the inside of the face plate panel.

30. The apparatus according to Claim 29 wherein the shutter is biased upwardly to slidably close the apertures and predisposed to slide downwardly with insertion of an object incidental into at least an aperture urging a translational surface on said shutter.
- 5 31. The apparatus according to any one of Claims 26 – 30 wherein a hatch is provided to cover over said apertures.
32. The apparatus according to Claim 31 wherein the hatch is hinged at any one of its top or bottom edge to said face plate panel.
- 10 33. The apparatus according to any one of Claims 26 – 32 wherein the apertures for the electrical conductor tracks in plane are outflanked by at least a mounting aperture at each end, said mounting apertures disposed for mounting means of a device for drawing electrical power supply from said face plate panel to be inserted and mounted
- 15 securely onto said face plate panel.
34. The apparatus according to any one of Claims 26 – 33, wherein the face plate panel is provided alternately with a plurality of blank face panels covering substantially over the length of the elongate housing.
- 20 35. The apparatus according to Claim 34, wherein a plurality of face plate panels and blank face panels are provided which are integrally moulded as a single piece of face panel unit.
- 25 36. The apparatus according to Claim 34, wherein a plurality of face plate panels and blank face panels are provided which are of modular sizes and capable of joining end to end to cover substantially the length of the elongate housing.
- 30 37. The apparatus according to any one of Claims 26 – 36 wherein the conductor elements of the device are provided as pins (5a, 6a, 7a) correspondingly to said L, E and N electrically conducting tracks; and said pins are connected to the power outlet side of the device which socket layout conforms to an industry standard socket layout

38. The apparatus according to Claim 37 wherein the pins (5a, 6a, 7a) are insertable into and slidably along the corresponding electrical conducting tracks (5b, 6b, 7b) through corresponding apertures of a face plate panel.
- 5 39. The apparatus according to any one of Claims 37 – 38 wherein mounting means are provided for securely mounting the device onto at least one of the elongate housing or face plate panel which is provided with additional aperture corresponding to each of the mounting means.
- 10 40. The apparatus according to Claim 39 wherein the mounting means comprises a pair of protuberances (3a, 10a) provided on the device's interfacing side with the housing and/or face plate panel and disposed outflanking any of said pins therewithin, and wherein said housing and/or face plate panel are provided with corresponding apertures for each of said protuberances (3a, 10a).
- 15 41. The apparatus according to Claim 40 wherein the pair of protuberances (3a, 10a) are provided in a linear disposition enclosing the electrical conducting elements.
42. The apparatus according to Claim 40 wherein the pair of protuberances (3a, 10a) are provided with latching means for securing mounting said device onto at least one of the elongate housing or face plate panel.
- 20 43. The apparatus according to Claim 40 wherein one of the protuberances is provided in the form of a leading pin (3a) which is longer than the other protuberance (10a) and pins (5a, 6a, 7a), wherein when inserting the device through the face plate panel, said leading pin (3a) reaches first into its corresponding aperture and pushes the shutter to open all the apertures.
- 25 44. The apparatus according to Claim 42 wherein the latching means may be released by actuating a release button.
- 30 45. The apparatus according to any one of Claims 26 – 44 further comprising a joint assembly joining end-to-end two of said elongate housing, said joint assembly comprising:

an electrically insulative polymeric edge joint member profiled to provided end-to-end joining between said two elongate housing such that

the respective electrical conductor tracks are aligned;

insulative underlay is provided in place of the housing base at the joint;

5 insulative interlay is provided between respective conductor tracking space in place of walls protruding integrally from the housing base at the joint; and

electrically conductive connectors of suitable lengths insertable into the tracks

and retained therein to connect respective ends of said electrical conducting

10 tracks of said two adjoining elongate housings.

46. The apparatus according to Claim 45 wherein a cover and screw retaining means are further provided to protectively cover the joined ends of two adjoining and abutting ends of two elongate housing.

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47. The apparatus according to Claim 45 configured with a switch to regulate power supply from a mains supply to the elongate housing's electrically conducting tracks.