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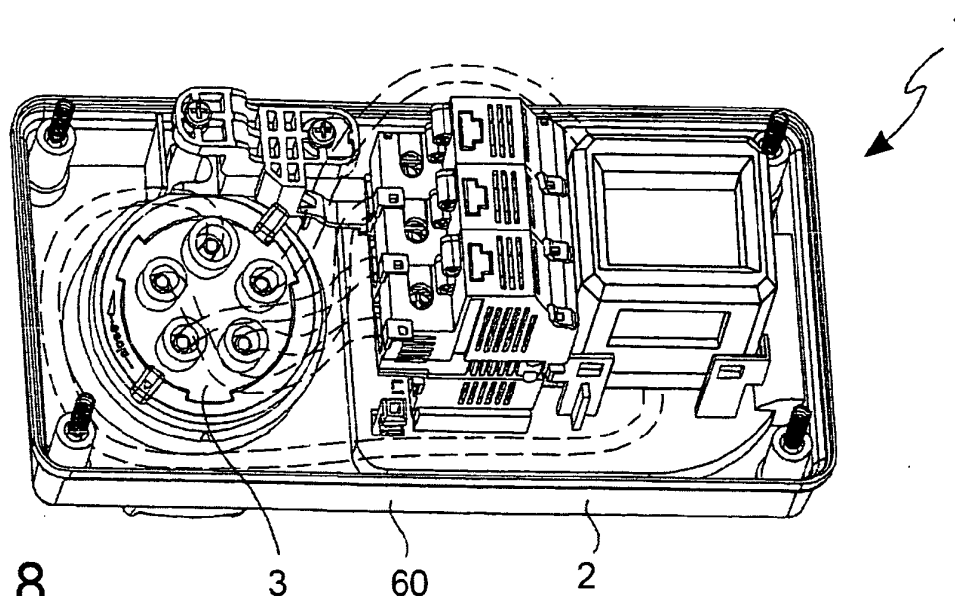
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(54) **Interlocked electrical outlet**

(57) An interlocked electrical outlet comprises a housing, an electrical outlet received in the housing and adapted to receive a corresponding electrical plug, a switch received in the housing and electrically connected to the electrical outlet so as to be able to allow and interrupt the power supply, an interlock mechanism received in the housing and interacting with switch and electrical

outlet so that the electrical outlet can receive and release the plug only once the switch has been turned out, and the switch can be turned on only once the plug has been plugged in the electrical outlet. Electrical outlet (3) and/or switch (4), and/or fuse-carrier assembly (33), where present, is directly secured to said housing (2) by means of a screwless shape connection.



**FIG. 8**

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## Description

**[0001]** The present invention generally relates to electrical outlets for industrial or service sector use, and particularly relates to an interlocked electrical outlet.

**[0002]** The interlocked electrical outlets are electrical power distribution devices which can be mounted on a wall or installed on special support panels.

**[0003]** An interlocked electrical outlet generally comprises a housing provided with connection means for a wall assembling, for example, a plurality of holes adapted to receive securing screws. The housing accommodates an electrical switch, an electrical outlet adapted to receive a corresponding electrical plug (for example, in accordance with the European standard EN 60309 concerning industrial electrical connectors), and electrically connected to the switch so as to be able to allow and interrupt the power supply, as well as an interlock mechanism interacting with switch and electrical outlet so that the electrical outlet can receive and release the plug only once the switch has been turned off and the switch can be turned on only once the plug has been plugged in into the electrical outlet.

**[0004]** Optionally, a protecting device can be provided, for example, a fuse assembly which is electrically connected between switch and electrical outlet.

**[0005]** Assembling of the components (outlet, switch, protecting device, and interlocking device) into the housing occurs by screwing the individual components together and in the housing, optionally by screwing or securing on intermediate supports, for example, frames or DIN guides, which are subsequently screwed into the housing.

**[0006]** The interlocked outlets of the prior art have the drawback that intermediate connections and screw connections increase both material cost and assembling time for the interlocked outlet. Furthermore, the reduced spaces which are available inside the housing make the mechanical assembling and electrical cabling of the interlocked outlet difficult.

**[0007]** Therefore, object of the present invention is to provide an interlocked electrical outlet having such characteristics as to reduce material costs, number of components, and assembly time.

**[0008]** This and other objects are achieved by an interlocked electrical outlet according to claim 1.

**[0009]** According to the invention, the interlocked electrical outlet comprises:

- a housing;
- an electrical outlet received in the housing and adapted to receive a corresponding electrical plug;
- a switch received in the housing and electrically connected to the electrical outlet so as to be able to allow and interrupt the power supply;
- an interlock mechanism received in the housing and interacting with switch and electrical outlet so that the electrical outlet can receive and release the plug

only once the switch has been turned out, and the switch can be turned on only once the plug has been plugged in in the electrical outlet,

5 in which at least the electrical outlet or at least the switch is directly secured to the housing by means of a screwless shape connection.

Thanks to the direct screwless shape connection, a reduction or elimination of connecting screws and other intermediate supports, as well as an easier and faster assembly of the interlocked outlet is achieved.

10 The dependant claims relate to advantageous embodiments.

**[0010]** In order to better understand the invention, and appreciate the advantages thereof, a detailed description of some exemplary, non-limiting embodiments will be set forth herein below, with reference to the annexed drawings, in which:

15 **[0011]** Fig. 1 is a perspective view of fuse-carrier device unit of the interlocked outlet according to an embodiment;

**[0012]** Fig. 2 is a perspective view of a fuse-carrier assembly preassembled by direct screwless coupling of the fuse-carrier devices in Fig. 1;

20 **[0013]** Fig. 3 is a perspective view of a fuse-carrier assembly and an electrical switch of the interlocked outlet according to an embodiment;

**[0014]** Fig. 4 is a perspective view of a switch-fuse assembly preassembled by direct screwless coupling of the fuse-carrier assembly and the electrical switch in Fig. 3;

25 **[0015]** Fig. 5 is an exploded view of an electrical outlet of the interlocked outlet according to an embodiment;

**[0016]** Fig. 6 is a perspective view of the electrical outlet in Fig. 5 in a preassembled configuration by direct screwless coupling of a housing outlet, a plurality of alveolar terminals, and a rear lid;

30 **[0017]** Fig. 7 is a perspective view of a front shell of a housing of the interlocked outlet with an interlock mechanism according to an embodiment;

35 **[0018]** Fig. 8 is a perspective view of a front shell in Fig. 7 once the interlocked outlet has been assembled and cabled;

**[0019]** Fig. 9 is a front perspective view of the interlocked outlet according to an embodiment;

40 **[0020]** Fig. 10 is a front view of the interlocked outlet in Fig. 9, complete with fuse-carrier lid and outlet lid.

**[0021]** with reference to the Figures, an interlocked electrical outlet is generally indicated with the reference numeral 1. The interlocked outlet 1 comprises a housing 2, inside which an electrical outlet 3 is received which is adapted to receive a corresponding electrical plug (not shown), a switch 4 electrically connected to the electrical outlet 3 so as to be able to thereby turn on and off the power supply, and an interlock mechanism 5 interacting with switch 4 and electrical outlet 3, so that the electrical outlet 3 can receive and release the plug only once the switch has been turned out, and the switch 4 can be turned on only once the plug has been plugged in in the

electrical outlet 3.

**[0022]** In accordance with an aspect of the present invention, the electrical outlet 3 is secured to the housing 2 directly (i.e., without intermediate supports) and by means of a screwless shape connection.

**[0023]** In accordance with an embodiment (Figs. 5, 6, 7), the electrical outlet 3 comprises an outlet body 6 with a front wall 7 defining inlet openings 8 in order to receive plug contact terminals (pins), and a plurality of inner seats 9 in order to receive alveolar contact terminals 10, in which seats 9 and inlet openings 8 are mutually communicating in order to guide the plug pin terminals to an electric contact engagement with the outlet 3 alveolar terminals 10. The inner seats 9 are open on an outlet body 6 rear side 11, from which the alveolar terminals 10 can be inserted in the outlet 3 pre-assembling step. The alveolar terminals 10 are held in place in the seats 9 thanks to a rear lid 12 which is connectable to the outlet body 6 by a screwless shape-coupling, preferably by snap-coupling.

**[0024]** In order to maximally promote the outlet 3 pre-assembling step, it is desirable to be able to plug-in and lock the alveolar terminals 10 into the respective seats 9 in an easy manner and without exerting a force. Instead, in such pre-assembling step, a locking of the alveolar terminals which is resistant to the plug plug-in or withdrawal forces is not required. Such mechanically resistant locking becomes crucial when the outlet 3 is mounted in the interlocked outlet housing 2 and is ready to be used.

**[0025]** In view of the above considerations, in accordance with an embodiment, rear lid and outlet body 6 can be connected by snap engagement of an elastic tooth 13 with a corresponding edge 14. Such connection is achievable quickly and without effort by means of a simple pressure (without an additional rotation) of rear lid 12 against the outlet body 6 rear side 11, so that the at least one elastic tooth 13 elastically snaps, thus engaging the corresponding edge 14.

**[0026]** According to the embodiment illustrated in Figs. 5 and 6, the rear lid 12 comprises three elastic tongues at the outer circumference thereof, preferably arranged at a pitch of 120°, projecting in the axial direction relative to the outlet body 6 and forming radially inwardly projecting teeth 13 at the free ends thereof. A circular flange 15 is formed on the outlet body 6 rear side 11 having three passages 16 which are preferably arranged at an angular pitch of 120°, and three little edges 14 formed in axial alignment with the passages 16 so that, during the application of the rear lid 12 on the outlet body 6 rear side 11, the elastic tongues with the teeth 13 insert in the passages 16 and elastically snap, thus engaging with the corresponding edges 14. Radial walls 18 of the passages 16 prevent a circumferential movement of the elastic teeth 13, thereby preventing an undesired rotation of the rear lid 12 relative to the outlet body 6. Furthermore, bridging portions 17 extend astride of the passages 16 and carry out a constraint (although weak) against an accidental disengagement of the teeth 13 from the edges

14 during the preassembled outlet 3 transport and handling.

**[0027]** The outlet body 6 advantageously comprises a plurality of circumferential tongues 19 so configured as to engage in a bayonet manner corresponding circumferential tongues 20 formed in a housing 2 outlet seat 21 in order to implement the above-mentioned direct screwless shape connection.

**[0028]** Alternatively, the bayonet connection can be replaced by a threaded connection, preferably with a limit stop.

**[0029]** In accordance with an embodiment of the present invention, the housing 2 outlet seat 21 forms one or more locking surfaces 22 so configured that, once the outlet 3 has been inserted in the outlet seat 21 (e.g., bayonet coupling in the closure position, or threaded coupling in the closure position), such locking surfaces prevent a movement of the coupling means, particularly of the rear lid 12 elastic teeth 13 from their engagement position to a release position.

**[0030]** In this manner, the outlet seat 21 locks the connection between rear lid 12 and the outlet body 6, thereby implementing an anchoring of the alveolar terminals 10 which is very resistant mechanically and suitable to the plug-in and withdrawal operations of the plug from the outlet 3.

**[0031]** In accordance with an embodiment, both the elastic teeth 13 and the locking surfaces 22 are formed at or near to bayonet tongues 19, 20 or outlet body 6 and outlet seat 21 threads. Particularly, once the outlet 3 has been coupled to the outlet seat 21, the locking surfaces 22 turn out to be radially arranged at the outside, and in contact with the elastic teeth 13 so as to prevent an outward flexure thereof.

**[0032]** In accordance with an aspect of the invention, the outlet seat 21 is formed as a single piece with the housing 2, and the connection between outlet 3 and housing 2 is screwless.

**[0033]** In accordance with a further embodiment, also the switch 4 is connected to the housing 2 directly (i.e., without intermediate supports) and by means of a screwless shape connection.

**[0034]** Since the connection between housing and switch is typically not subjected to high mechanical stresses, but requires a proper mutual positioning, the provision of shape and snap connection means which concomitantly implement anti-side movement, anti-withdrawal, and anti-rotation means can be advantageous.

**[0035]** To this aim, the switch 4 can comprise a parallelepiped shape with a plurality of connecting teeth 23 adapted to snap-engage corresponding little edges 24 formed in a housing switch seat 25, e.g., in projections 26 which are elastically yielding (within preset limits) which project from an inner surface 26 of the housing 2. Beside the little edges 24, which implement an anti-withdrawal coupling, the switch seat 25 can comprise one or more resting surfaces 27 which engage corresponding switch 4 outer surfaces in order to prevent side move-

ments and rotations.

**[0036]** In accordance with an embodiment (Figs. 3, 7, 8), the projections 26, for example, three or four projections arranged at three or four switch angles, respectively, have an "L"-shaped portion 29 forming the resting surfaces 27 in order to engage the two adjacent surfaces, respectively, defining the switch angles.

**[0037]** Advantageously, the teeth 23 are formed only in two opposite surfaces of the switch, while the other surfaces do not concur to the anti-withdrawal coupling. Similarly, the little edges 24 can be formed only in one wall of the "L"-shaped portions 29.

**[0038]** This allows an assembling by means of a simple pressure of the switch 4 into the switch seat 25, and makes the switch 4 disassembling from the switch seat 25 easier, by means of a spacing apart of the projections 26 from the switch 4 only in one direction.

**[0039]** In accordance with a further embodiment, the switch 4 can comprise two guide projections or relieves 28 having a tapered front portion and adapted to insert in the space between two projections 26 or the "L"-shaped portions 29 thereof in order to promote the proper switch 4 positioning during assembling.

**[0040]** Advantageously, the connecting projections 26 are formed as a single piece with the interlocked outlet 1 housing 2.

**[0041]** An opening can be formed in the housing 2 at the switch seat 25 allowing the passage of a shaft (with coupling portion in rotation, e.g., polygonal or knurled) 30 of the switch 4, to which an actuating handle 31 can be secured from outside the housing 2.

**[0042]** The switch 4, particularly the shaft 30 or actuating handle 31, comprise a dragging portion 32, for example, an eccentric pin actuating the interlock mechanism 5, which will be described herein below.

**[0043]** In accordance with a further embodiment of the invention, the interlocked outlet 1 comprises a fuse-carrier assembly 33 which is electrically connected between switch 4 and outlet 3.

**[0044]** The fuse-carrier assembly 33 can comprise a plurality of individual fuse-carrier devices 34, each adapted to hold a fuse, and provided with contact terminals in order to allow the fuse electrical connection in the power supply lines between switch 4 and electrical outlet 3.

**[0045]** According to an aspect of the present invention, the fuse-carrier assembly 33 is secured to the housing 2 directly (i.e., without intermediate supports) and by means of a screwless shape connection.

**[0046]** A direct screwless shape connection of the fuse-carrier assembly 33 to the housing could be also the individual screwless shape connection, for example, in the case when switch and electrical outlet are connected to the housing by means of screws, by gluing, or in another manner.

**[0047]** According to an alternative or additional aspect, the fuse-carrier assembly 33 can be preassembled with the switch 4 so as to form a fuse-carrier 33 - switch 4 unit. A direct connection between fuse-carrier assembly

33 and switch 4 is achievable by means of electrically conductive connecting members 35 which combine the electrical terminal and mechanical coupling functions. Such connecting members 35 are preferably essentially rigid electrical terminals projecting from the individual fuse-carrier devices 34 and so configured as to engage corresponding electrical terminals 36 of the switch 4, so as to implement an electrical and mechanical connection, for example a "plug and outlet"-type connection. It shall be apparent that it is sufficient that the mechanical strength of the direct connection between fuse-carrier assembly and switch ensures the mutual positioning thereof in the pre-assembling step and during assembling, i.e., during the coupling of the fuse-carrier-switch unit to the interlocked switch housing. In this case, again, an easy and not necessarily "strong" mechanical coupling between fuse-carrier and switch in the pre-assembling step, and a definitive and resistant coupling of the individual components in the housing 1 is desirable.

**[0048]** In accordance with an embodiment (Figs. 3, 4, 7), the housing 2 forms a fuse-carrier seat 37, preferably adjacent to the switch seat 25, with a plurality of elastically yielding tongues 38 having teeth 39 adapted to snap-engage corresponding little edges or slits 40 formed in the fuse-carrier assembly 33. To the aim of making the assembling or an optional disassembling easier, the teeth 39 are formed only on two opposite sides of the fuse-carrier seat 37. Thanks to this configuration, it is sufficient to space apart the elastic tongues 38 from the fuse-carrier assembly 33 only to one direction in order to detach the fuse-carrier assembly 33 from the housing 2.

**[0049]** In accordance with an embodiment, the fuse-carrier seat 37 comprises guide and positioning walls 41 so arranged as to define a polygon, preferably a rectangle, and adapted to engage outer walls of the fuse-carrier assembly 33 in order to prevent the rotation or side movements thereof.

**[0050]** Such walls 41 define a preferably rectangular opening 42 for the passage of an outer portion 43 of the fuse-carrier assembly, with the aim of allowing the blown fuses replacement by access from outside the housing 2.

**[0051]** According to a further embodiment of the invention (Figs. 1 and 2), the individual fuse-carrier devices 34 are mutually directly connected (i.e., without intermediate supports, for example, DIN guides or assembling plates) and by a screwless shape connection.

**[0052]** To this aim, the fuse-carrier devices 34 comprise two opposite and parallel side walls 44, 45 intended to adhere to a corresponding side wall 45, 44 of the adjacent fuse-carrier device 34.

**[0053]** A first side wall 44 comprises at least one, preferably a plurality of, protuberances 46 projecting to the direction of the adjacent fuse-carrier device 34, and which are so configured as to engage it, for example by snap- or friction-engagement.

**[0054]** Preferably, the protuberances 46 are arranged at a plurality of (for example, 4) angles of the fuse-carrier device 34, and have an, e.g. "L"-shaped, angular section,

so as to engage the angle of the adjacent fuse-carrier device 34, thereby ensuring an anti-displacement and anti-rotation locking.

**[0055]** Furthermore, a pin 47 projecting from the side wall 44, 45 and adapted to engage a hole formed in the side wall 45, 44 of the adjacent fuse-carrier device 34 can be provided.

**[0056]** In order to increase the connection strength between two adjacent fuse-carrier devices 34, the protuberances 46 can be provided with a little tooth or edge 48 adapted to snap-engage a corresponding edge or little tooth 49 formed in the adjacent fuse-carrier device 34.

**[0057]** During the assembling of the preassembled switch 4/fuse-carrier 33 unit into the housing 2, the whole switch - fuse-carrier unit is pushed into the adjacent respective seats 37, 25 which lock and secure the relative position of the fuse-carrier assembly in a definitive manner relative to the switch (in the pre-assembling step, such relative connection and positioning has been ensured only by the electrical terminals 35, 36 of fuse-carrier assembly and switch).

**[0058]** The interlock mechanism 5 comprises a latch 48 movably arranged, preferably translatable, in a latch seat 49 formed in the housing 2. The latch 48 comprises an actuating seat 50 connected to the switch 4 dragging portion 32 so that a switching of the switch 4 between a connection position and a power supply interruption position involves a corresponding movement of the latch 48 between a connection position and a power interruption position.

**[0059]** The latch 48 comprises a plug locking portion 51 arranged at the outlet seat 21 and configured so that:

**[0060]** once the plug has been plugged in, the plug locking portion 51 turns out to be unconstrained from the outlet 3 or outlet seat 21, allowing a latch 48 movement between the electrical connection position to the power interruption position, and vice versa, and;

**[0061]** once the plug has been unplugged, the plug locking portion 51 turns out to be constrained from the outlet 3 or outlet seat 21 in the power interruption position, preventing a latch 48 movement from the power interruption position to the electrical connection position; and

**[0062]** once the latch 48 has been arranged to the power interruption position, the plug locking portion 51 releases the outlet 3 or outlet seat 21, allowing the plug plug-in and withdrawal; and

**[0063]** once the latch 48 has been arranged to the electrical connection position, the plug locking portion 51 directly or indirectly constrains the plug, preventing the withdrawal thereof from the outlet 3.

**[0064]** The latch 48 or, generally, the interlock mechanism 5, can further comprise a door locking portion 52 interacting with a corresponding hook 53 of a fuse-carrier door 54 so that, once the latch 48 has been arranged to the electrical connection position, the door locking portion 52 constrains the fuse-carrier door 54 in the closed position, preventing the opening thereof, therefore preventing access to the fuse-carrier devices and, once the latch

48 has been arranged to the power interruption position, the door locking portion 52 releases the fuse-carrier door 54, allowing the opening thereof.

**[0065]** In accordance with a further embodiment, the latch 48 or, generally, the interlock mechanism 5, can further comprise one or more fuse-carrier locking portions 55 interacting with the individual fuse-carrier devices 34 so that, once the latch 48 has been arranged to the electrical connection position, the fuse-carrier locking portion 55 constrains the fuse-carrier device 34 to a closed configuration, preventing access to the individual fuse and, only once the latch 48 has been arranged to the power interruption position, the fuse-carrier locking portion 55 releases the fuse-carrier device 34, allowing the opening thereof.

**[0066]** Preferably, the fuse-carrier locking portions 55 comprise at least one pin adapted to engage, once the latch 48 is in an electrical connection position, a corresponding seat or hole 56 formed in a fuse drawer 57 of the fuse-carrier device 34 in order to prevent the fuse drawer 57 opening.

**[0067]** According to an embodiment of the invention, the latch 48 is held in place by a preferably screwless shape connection in an interspace between switch 4 and switch seat 25 of the housing 2.

**[0068]** Fig. 7 further illustrates a pushing device 58 secured to the housing 2 by means of screws or, alternatively, by a snap connection or by press-fit, and provided with an elastic arm 59 acting with an elastic pre-load on a portion (for example, the hook 53) of the fuse-carrier door 54 in order to make the opening thereof easier.

**[0069]** In accordance with an embodiment, all the electrical components -outlet, switch, interlock mechanism, and fuse-carrier assembly- are directly connected to a housing 2 front shell 60, which can, in turn, be connected by means of screws 61 to a rear shell to complete the assembling.

**[0070]** As regards the electrical connection of the interlocked outlet components, it is advantageous to implement the electrical connection between switch and fuse-carrier assembly by a plug-in of the "plug in"-type of the fuse-carrier terminals 35 in the corresponding switch terminals 36, or vice versa, without the interposition of electrical cables.

**[0071]** In order to further limit the number of the individual components, and particularly of the screws, according to an aspect of the invention, the remaining electrical connections or, generally, the electrical connections between switch, outlet, and fuse-carrier, can comprise screwless quick plug-in terminals, for example of the FASTON-type.

**[0072]** The interlocked electrical outlet according to the present invention has a reduced number of components, allows a rapid and easy preassembling of individual functional units, without the aid of special equipments, as well as a rapid and easy final assembling.

**[0073]** Thanks to the particular configuration of the mechanical connections of the individual components in the

pre-assembling and assembling steps, the mechanical strength, therefore the force needed to handle the components, turn out to be reduced, being anyhow sufficient to the preassembling and assembling needs. The mechanical strength and ultimate sturdiness which are achieved thanks to the synergic combination of "weak" connections formed in the pre-assembling step with the connections implemented during the final assembling into the housing, instead, turns out to be satisfactory also for very demanding uses, for example, in the industrial field.

**[0074]** It shall be apparent that to the interlocked electrical outlet according to the present invention, one skilled in the art, to the aim of meeting specific, contingent needs, will be able to make further modifications and variations, all of which anyhow fall within the protection scope of the invention, as defined by the following claims.

### Claims

1. An interlocked electrical outlet (1) comprising:

- a housing (2);
- an electrical outlet (3) received in the housing (2) and adapted to receive a corresponding electrical plug;
- a switch (4) received in the housing (2) and electrically connected to the electrical outlet (3) so as to be able to allow and interrupt the power supply;
- an interlock mechanism (5) received in the housing (2) and interacting with switch (4) and electrical outlet (3) so that the electrical outlet (3) can receive and release the plug only once the switch has been turned out, and the switch can be turned on only once the plug has been plugged in the electrical outlet;

**characterized in that** said electrical outlet (3) and/or said switch (4) is directly secured to said housing (2) by a screwless shape connection.

2. The interlocked electrical outlet (1) according to claim 1, wherein the electrical outlet (3) comprises:

- an outlet body (6) with a front wall (7) defining inlet openings (8) in order to receive plug contact terminals (pins) and a plurality of inner seats (9) in order to receive alveolar contact terminals (10);
- a lid (12) to hold the alveolar terminals (10) in place in the seats (9),

wherein said lid (12) is connectable to the outlet body (6) through screwless shape coupling means (13).

3. The interlocked electrical outlet (1) according to

claim 2, wherein lid (12) and outlet body (6) are connected by snap engagement of at least one elastic tooth (13) with at least one corresponding edge (14).

4. The interlocked electrical outlet (1) according to any preceding claim, wherein said outlet body (6) comprises a plurality of circumferential tongues (19) so configured as to engage in a bayonet manner corresponding circumferential tongues (20) formed in an outlet seat (21) of the housing (2) in order to implement said direct screwless shape connection.

5. The interlocked electrical outlet (1) according to claim 2 or 3, wherein the housing (2) outlet seat (21) forms one or more locking surfaces (22) so configured that, once the outlet (3) has been inserted in the outlet seat (21), said locking surfaces (22) prevent a movement of the shape-connection means, for example, of said elastic teeth (13), of the lid (12) from the engaging position thereof to a release position.

6. The interlocked electrical outlet (1) according to any preceding claim, wherein said switch (4) is directly connected to the housing (2) by means of screwless shape connection means (23, 24).

7. The interlocked electrical outlet (1) according to claim 6, wherein said connection means (23, 24) comprise snap-connection means, anti-side movement, anti-withdrawal and anti-rotation means.

8. The interlocked electrical outlet (1) according to claim 7, wherein:

- said anti-withdrawal means comprise a plurality of connecting teeth (23) formed at said switch (4) and adapted to snap engage corresponding little edges (24) formed in a switch seat (25) of the housing (2);
- said anti-rotation and anti-side movement means comprise a plurality of projections (26) arranged at at least three angles of the switch (4) and having an "L"-shaped portion (29) forming resting surfaces (27) in order to engage the two adjacent surfaces, respectively, defining said switch angles.

9. The interlocked electrical outlet (1) according to any preceding claim, comprising a fuse-carrier assembly (33) which is electrically connected between switch (4) and outlet (3), and secured to said housing (2) directly and by means of a screwless shape connection.

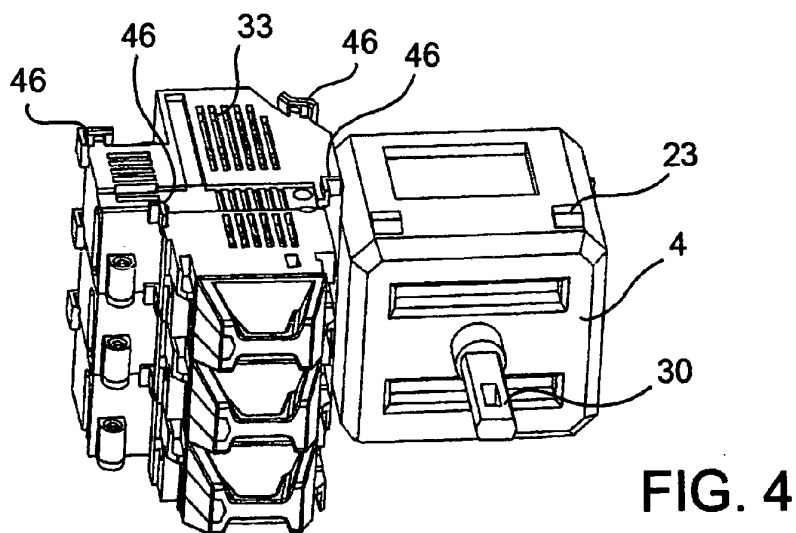
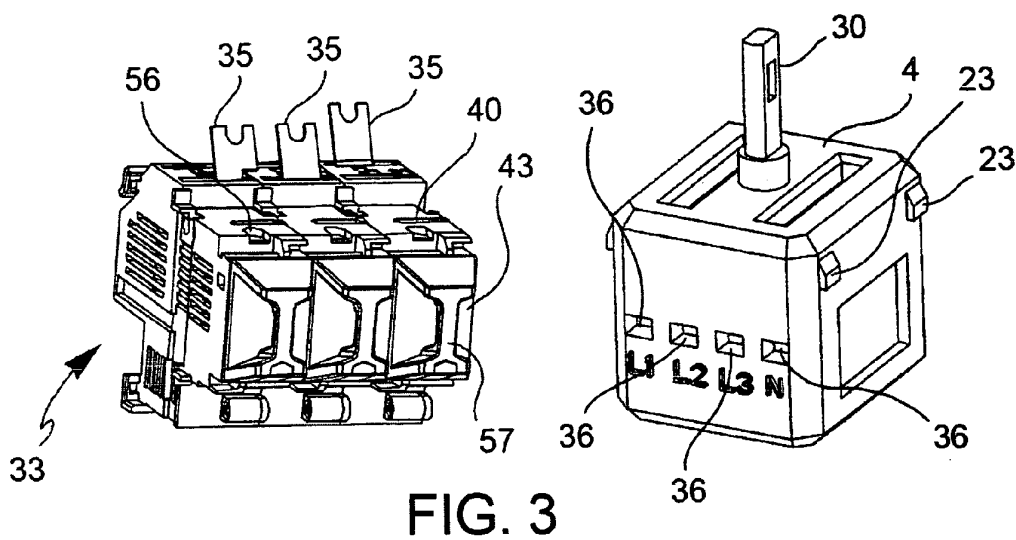
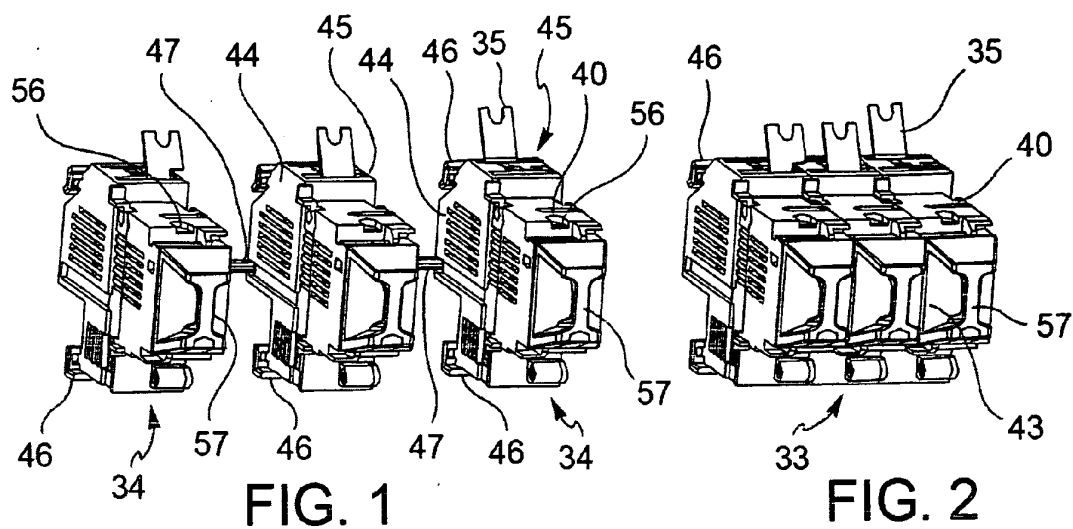
10. The interlocked electrical outlet (1) comprising:

- a housing (2);

- an electrical outlet (3) received in the housing (2) and adapted to receive a corresponding electrical plug;
- a switch (4) received in the housing (2) and electrically connected to the electrical outlet (3) so as to be able to allow and interrupt the power supply;
- an interlock mechanism (5) received in the housing (2) and interacting with switch (4) and electrical outlet (3) so that the electrical outlet (3) can receive and release the plug only once the switch has been turned out, and the switch can be turned on only once the plug has been plugged in the electrical outlet;
- a fuse-carrier assembly (33) electrically connected between switch (4) and outlet (3),

**characterized in that** said electrical outlet (3) and/or said switch (4), and/or said fuse-carrier assembly (33) is directly secured to said housing (2) by means of a screwless shape connection.

11. The interlocked electrical outlet (1) according to any preceding claim, comprising a fuse-carrier assembly (33) which is electrically connected between switch (4) and outlet (3), wherein said fuse-carrier assembly (33) is preassembled with said switch (4) to form a fuse-carrier/switch unit (33, 4).
12. The interlocked electrical outlet (1) according to the preceding claim, wherein said fuse-carrier assembly (33) and said switch (4) are mutually directly connected by connecting members (35) which are electrically conductive and sufficiently rigid to combine electrical terminal and mechanical coupling functions.
13. The interlocked electrical outlet (1) according to any preceding claim, comprising a fuse-carrier assembly (33) which is electrically connected between switch (4) and outlet (3), said fuse-carrier assembly (33) having a plurality of individual fuse-carrier devices (34) mutually connected directly and by means of a screwless shape connection.
14. The interlocked electrical outlet (1) according to claim 13, wherein said fuse-carrier devices (34) comprise two opposite side walls (44), (45) intended to adhere to a corresponding side wall (45, 44) of the adjacent fuse-carrier device (34), wherein a first side wall (44) comprises at least one protuberance (46) projecting to the direction of the adjacent fuse-carrier device (34), thus snap- or friction-engaging it.
15. The interlocked electrical outlet (1) according to claim 14, wherein said protuberances (46) are arranged at at least two angles of the fuse-carrier device (34) and have an "L"-shaped angular section so
- as to engage at least two angles of the adjacent fuse-carrier device (34).
16. The interlocked electrical outlet (1) according to any preceding claim, wherein said interlock mechanism (5) comprises a latch (48) movably arranged in a latch seat (49) formed in the housing (2), wherein a portion of the latch (48) is firmly locked in an interspace between switch (4) and switch seat (25) of the housing (2).
17. The interlocked electrical outlet (1) according to any preceding claim, wherein the electrical connection between switch and fuse-carrier assembly comprises a plug-in connection without cables.
18. The interlocked electrical outlet (1) according to any preceding claim, wherein the electrical connection between switch, outlet, and fuse-carrier comprise rapid screwless plug-in terminals, for example of the FASTON-type.





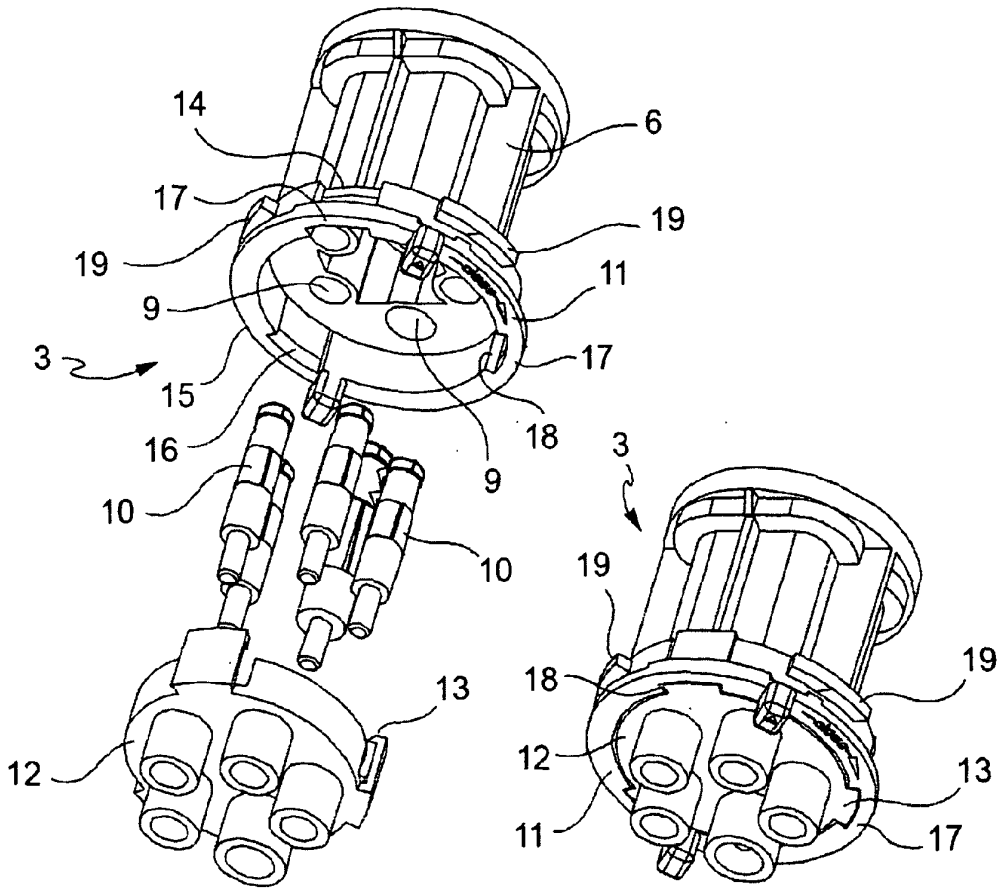


FIG. 5

FIG. 6

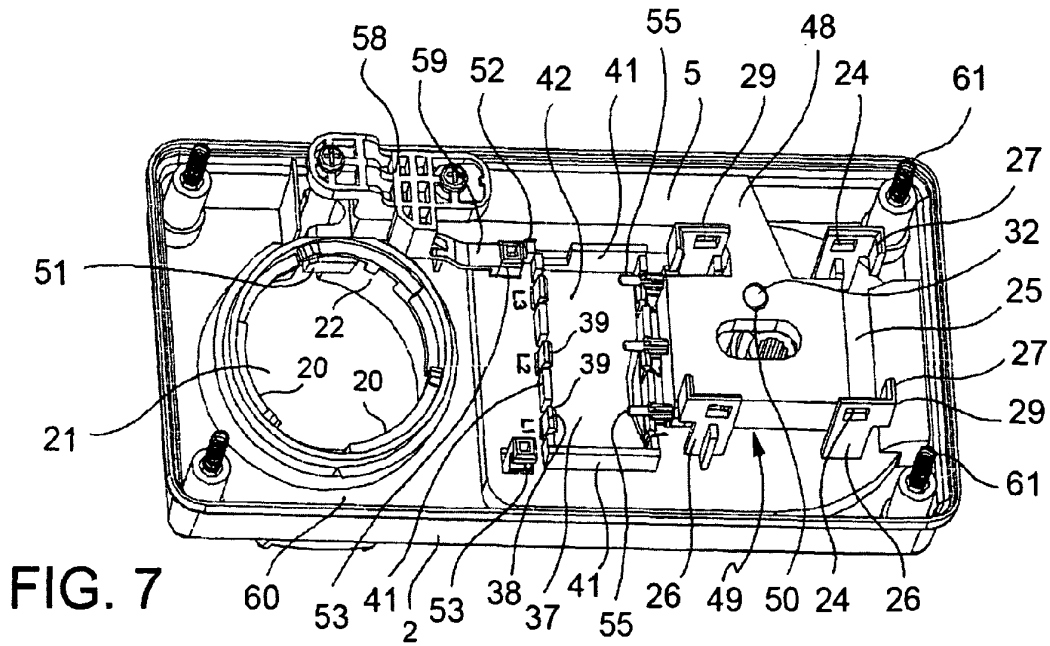


FIG. 7

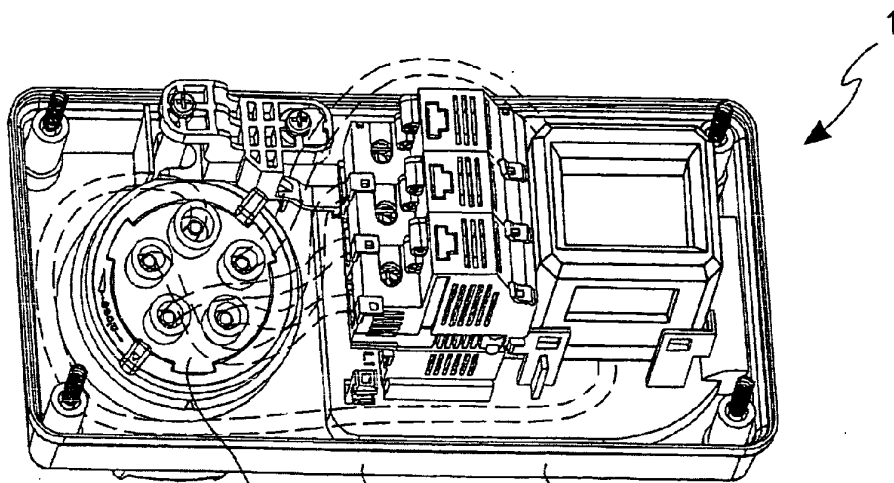


FIG. 8

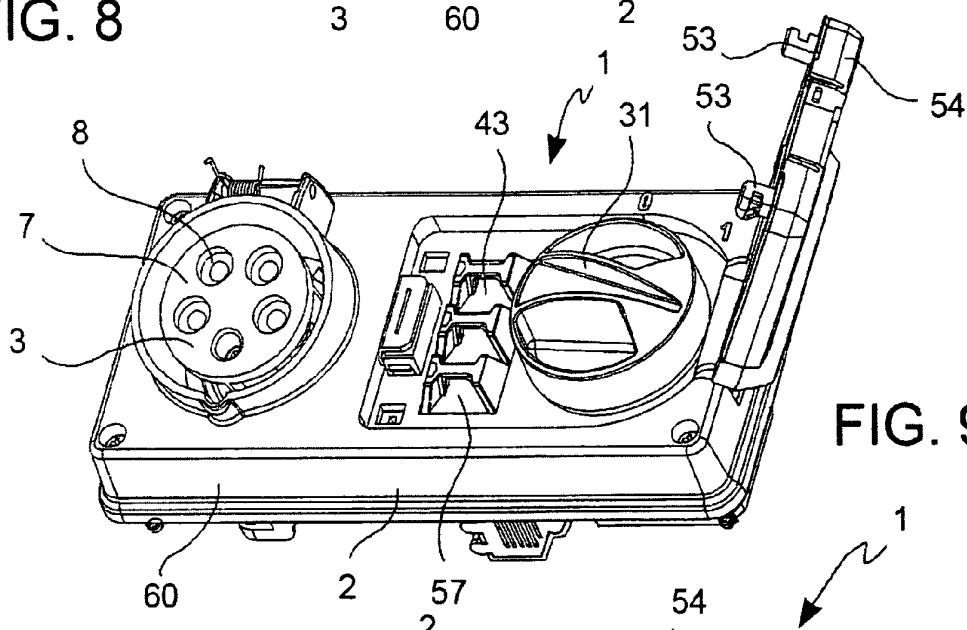


FIG. 9

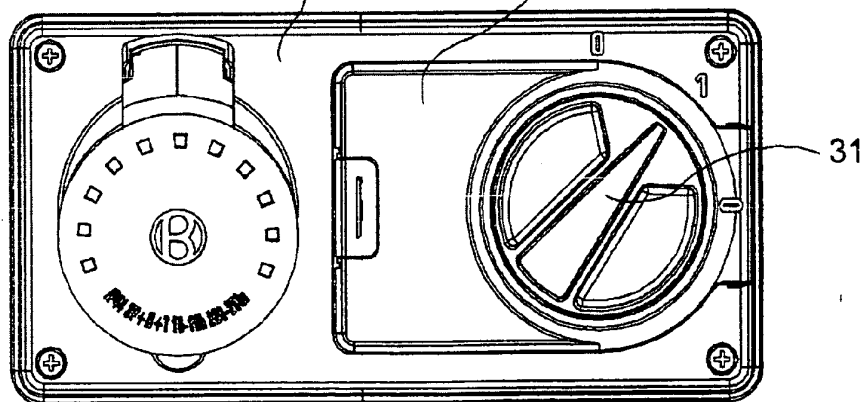


FIG. 10



EUROPEAN SEARCH REPORT

Application Number  
EP 08 42 5313

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The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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