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(54) MULTIPLE ELECTRICAL SOCKET

(57) A multiple electrical socket (10) comprises an engaging area (11) intended to receive alternately a first type of plug (70) and at least one second type of plug (74). The engaging area (11) comprises in turn a first series of holes (17) and at least one second series holes (18), said first and second series of holes being intended for the axial insertion therein of pins respectively of plugs of the first and second plug types for electrical contact between socket and plug. The edges of the engaging area (11) are also provided with two resilient electrical contact earth elements (19, 20) projecting above the engaging area (11) for making electrical contact with corresponding lateral earth terminals (71, 72) of the first type of plug. Movements means (21) are provided underneath the engaging area (11) and are actuated by the insertion of a plug (74) of the second plug type into the corresponding second series of holes (18) so as to move at least one of said resilient elements (19, 20) towards the outside of the engaging area (11).

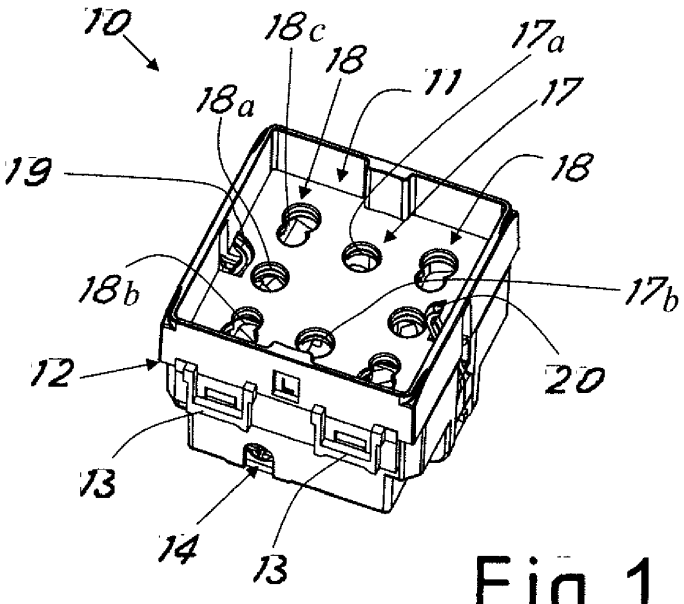


Fig.1

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Description

[0001] The present invention relates to a multiple electrical socket (or "multistandard" socket), namely an electrical socket which allows the alternate connection of two or more different types of plug for connection to the electricity mains. Advantageously, this socket may also be of the modular type, namely of the type which can be engaged in a special mounting frame in the installation, where necessary in combination with other complementary, modular, electrical parts.

[0002] In the prior art it is known that there exist plugs for electrical installations which have engaging pins arranged parallel and projecting from the body of the plug, for connecting the poles of the power supply line, and lateral contacts on the body for the corresponding electrical earth connection. For example, such a type of plug is the type known as a "Schuko plug".

[0003] Another type of plug instead has only the engaging pins arranged parallel and projecting from the body, with optionally one of these pins which forms the contact for the electrical earth connection. For example, plugs of this type are so-called "Italian plugs" with three pins in line, the central one of which being the earth pin, and so-called "European plugs" with only two pins and no earth.

[0004] Since there is the often the need to be able to engage alternately plugs of one type or another type in the same socket, in the prior art "multiple" (or "multistandard") sockets have been proposed, these being able to house equally well a plug of one of the two types.

[0005] One of the problems in the design of these multiple sockets is that of preventing the parts indispensable for engagement with the first type of plug accepted by the multiple socket from interfering with the parts indispensable for engagement with the second type of plug accepted by the multiple socket and vice versa.

[0006] For example, the resilient earth contact elements of the sockets of the first type define a precise space for receiving the first type of plug. The plug of the second type must therefore also be seated inside this space, without there being any undesirable interference with these resilient elements or, worse still, without said resilient elements being accidentally damaged and/or distorted during the operations for inserting and removing a plug of the second type. At the same time, it is desirable to avoid that these resilient elements may inconveniently cause excessive friction against parts of the plug of the second type, damaging it.

[0007] In the case of plugs of the second type with a flat body in the plane of the pins (as for example in the case of so-called "Italian" or "European" plugs), it has been attempted to overcome the problem, by designing the multiple sockets so that the flat plug of the second type is received inside the seat provided for the plug of the first type (which usually has a much bigger, generally cylindrical body) with the larger transverse extension of the flat body arranged transversely between the resilient elements. In this way, the plugs of the second type remain with their body well spaced from the resilient elements.

[0008] This solution, however, limits greatly the designer and does not allow entirely satisfactory sockets to be obtained for the various types of plugs of the second type. Moreover, it is not possible to optimize in a satisfactory manner the space occupied by the socket.

[0009] For example, even merely limiting oneself to the plugs of the first type with a generally cylindrical shape and the plugs of the second type with a transversely flattened form, the corresponding specific sockets have quite different dimensions such that two sockets of the second type could be arranged in the space occupied by a socket of the first type. For example, in the case of sockets for modular installations, the socket of the first type occupies the space of two standard modules, while the socket of the second type occupies the space of only one standard module.

[0010] In multiple sockets, however, the overall size is determined by the larger size socket and therefore, when mounting a multiple socket in an installation (for example with wall-mounted boxes and mounting frame for modular sockets), in the space which usually can accommodate two sockets of the smaller type, it is possible to mount only one single multiple socket which is able to accommodate in turn only one plug of one or the other type.

[0011] In the prior art attempts have been made to design multiple sockets which, with particular arrangements of two separate series of contact holes, could accommodate alternately in the same space either one plug of the first type or two flat plugs of the second type alongside each other.

[0012] In order to try to avoid interference with the resilient contact elements of the plugs of the first type, it has for example been proposed designing these multiple sockets so as to have the two flat plugs of the second type arranged alongside each other on the two sides of an imaginary plane passing through the resilient contact elements necessary for the cylindrical plug of the first type. Such a type of socket is described, for example, in DE2915816A1, DE3512899A1 and DE3404482A1.

[0013] However, with this arrangement it is possible to provide only sockets for plugs of the second type with only two pins, since with this arrangement each of the two contact holes for the first type of plug lies between the two contact holes for each of the two plugs of the second type, namely approximately in the position where for example the hole for earth pin of plug of the second type (if provided) should be positioned.

[0014] In Italian patent application BG2012A000027 it was also proposed arranging two flat plugs of the second type arranged transversely with respect to the imaginary plane passing through the resilient contact elements for a cylindrical plug of the first type, such as to have the holes for the plug of the first type well spaced from the holes for the plugs of the second type and be able to accommodate plugs with more than two pins (for exam-

ple plugs with a central earth pin).

[0015] Although this latter socket functions in a satisfactory manner, it still has the possible drawbacks associated with having the plugs of the second type close to the resilient contact elements provided for the plug of the first type.

[0016] This not only may produce an undesirable interference between the resilient elements and the plugs of the second type, but, during the design stage, also prevents a reduction in the relative distance between the resilient elements in the rest condition, for example in order to increase the contact force between these resilient elements and the contact surfaces of the plug of the first type, or in order to compensate for possible dimensional tolerances associated with production or wear of the plug of the first type.

[0017] Since the resilient contact elements are generally formed by means of metal tongues with their free end slightly inwardly curved and directed towards the direction of insertion of the plugs, a further problem which may arise with an arrangement of the plugs of the second type close to the resilient elements is that the free end of the resilient elements may come up against the front part of body of the plug of the second type when the plug is pushed during insertion into the socket, preventing insertion and/or detaching the resilient elements.

[0018] The free end of each resilient element, however, may not either be extended and curved more towards the outside in order to prevent interference, since in this case the resilient elements (which are pushed outwards by the corresponding plug so as to provide the required contact force) would protrude excessively from the sides of the socket when a plug of the first type is inserted therein. This could, for example, cause the ends of the resilient elements to interfere with the adjacent parts of the socket support frame or with other sockets or devices situated alongside it.

[0019] The general object of the present invention is to provide a multiple socket which is able to overcome the aforementioned problems of the prior art and which is able to accommodate sockets of the first type and second type, avoiding, for example, undesirable interference with and between the resilient elements necessary for the plugs of the first type.

[0020] In view of this object, the idea which has occurred according to the present is to provide a multiple electrical socket comprising an engaging area intended to receive alternately a first type of plug and at least one second type of plug, the engaging area comprising a first series of holes and at least one second series holes, said first and second series of holes being intended for the axial insertion therein of pins respectively of plugs of the first and second plug types for electrical contact between socket and plug, edges of said engaging area also being provided with two resilient electrical contact earth elements projecting above the engaging area for electrical contact with corresponding lateral earth terminals of the first type of plug, characterized in that it comprises, underneath the engaging area, movements means which are actuated by the insertion of a plug of the second type into the corresponding series of holes and that, when actuated, they move at least one of said resilient elements towards the outside of the engaging area.

[0021] In order to illustrate more clearly the innovative principles of the present invention and its advantages compared to the prior art, an example of embodiment applying these principles will be described below with the aid of the accompanying drawings. In the drawings:

- Figure 1 shows a perspective view of a possible embodiment of a multiple socket according to the invention;
- Figure 2 shows a multiple socket according to the invention housed inside a support frame together with a conventional socket;
- Figure 3 shows a partially sectioned and enlarged side view of an actuator mechanism inside a socket according to the invention;
- Figure 4 shows an exploded perspective view of a detail of a socket according to the invention;
- Figure 5 shows a side view of a detail as in Figure 4;
- Figure 6 shows an exploded perspective view of a possible embodiment of a socket according to the invention;
- Figure 7 shows a schematic side view of an engaging part of a socket according to the invention with a first plug inserted;
- Figure 8 shows a schematic side view of an engaging part of a socket according to the invention with second plugs partially inserted.

[0022] With reference to the figures, Figure 1 shows a multiple socket according to the invention, denoted generally by 10.

[0023] The socket 10 comprises an engaging area 11 intended to receive alternately a plug of the first plug type (namely with lateral earth contacts) or at least one plug of the second type (namely without lateral earth contacts and with or without earth pins), as will be clarified below. Advantageously, but not exclusively, the first type of plug may be of the type known as a "Schuko plug" and the second type of plug may be a plug of the so-called "Italian" or "European" type, or variants thereof such as the type-J plugs with staggered earth pin and used for example in Switzerland or Brazil.

[0024] Preferably the engaging area has a surface which is inset in the front of the socket, as is known for ensuring electrical safety and mechanical engagement with the plugs of the first type.

[0025] The multiple socket shown in Figure 1 is advantageously of the modular type, namely is formed as a module for engagement with other parts in an electrical installation, but may also be designed for separate use or for use in electrical apparatus, as may be easily imagined by the person skilled in the art. For example, the socket may form part of a multiple socket, namely a de-

vice provided with a plurality of sockets arranged alongside each other for mobile use or use in a fixed installation.

[0026] When modular in form, the socket 10 may comprise advantageously a box-like container 12 with the engaging area 11 situated on a first front face thereof, coupling means 13 which are intended to be coupled together with a support frame and which are arranged on sides of the container situated laterally in relation to said first face, and electrical connection terminals 14 which are arranged in the region of a rear face of the container opposite to the first face.

[0027] The coupling means 13 may be of any known type (for example teeth or seats for the interlocking engagement of complementary elastic lugs) used for the assembly of modular parts of an electrical installation. For example, depending on the requirements, the modular form and the coupling means may be designed in accordance with any range of modular electrical components, such that a socket designed according to the invention may form part of this range.

[0028] Figure 2 shows in schematic form by way of example the socket 10 with a modular design inserted inside a special frame 15 for mounting the socket together with other modular components of the installation (in the figure a known single socket module indicated by 16 is shown). The frame 15 may be a frame which is known per se and intended for example to be mounted on a flush-mounted box (not shown) by means of screws or other known fixing means. By way of example, Figure 2 also shows schematically in broken lines the plan-view outlines of a plug 70 of the first type and plugs 74 of the second type, which can be housed inside the socket as will be clarified below.

[0029] Although particular reference is made to a modular socket, it is understood however that the characteristic features of the invention described may also be applied to sockets of a different type, as will be evident to the person skilled in the art, without thereby departing from the scope of the present invention.

[0030] In a socket designed according to the invention, the engaging area 10 comprises a first series of holes 17 (for example two holes) and at least one second series of holes 18 (for example three holes).

[0031] The first series of holes 17 is intended for the axial insertion of pins of plugs of the first type, while the second series of holes is intended for the axial insertion of pins of a plug of the second type.

[0032] As can be clearly seen again in Figure 1, the edges of the engaging area 11 are provided with two resilient elements 19, 20 forming an electrical earth contact projecting above the engaging area for making electrical contact with corresponding lateral earth terminals of the first type of plug.

[0033] Advantageously, each resilient element is formed with a resilient metal tongue having ends which are slightly inwardly curved and which resiliently flex towards the outside of the engaging area.

[0034] As stipulated for example in the standard governing Schuko-type sockets, the resilient elements are preferably arranged in diametrically opposite positions of the engaging area and the first series of holes extends in a direction transverse to the line which joins together the two resilient elements. This joining line also represents advantageously the direction of resilient movement of the two resilient elements 19, 20.

[0035] In the case of a Schuko-type socket or the like, the holes of the first series are two in number (17a and 17b) and arranged centrally between the tongues.

[0036] In the advantageous embodiment shown, the holes of the second series are aligned in a direction transverse to the direction of movement of the tongues. Moreover, these holes are preferably three in number, with the lateral holes 18a and 18b intended for the power supply connection and the central hole 18c intended for the electrical earth connection.

[0037] Again advantageously, the second series of holes consist of two series of holes 18, each series being close to one of the resilient elements 19 and 20. Each series 18 is intended to receive a flat plug of the second plug type, as will be clarified below. The engaging area is advantageously designed with a generally square shape and with suitable dimensions for the sockets to be mounted, albeit inset in the front face of the socket. Preferably, the second series of holes (or each second series of holes) forms a per se known double-spaced socket for receiving plugs of the second of type with different distances between the pins. For example, in the case of Italian-type plugs, the lateral holes 18a and 18b may be designed so as to receive the lateral pins for 16A or 10A sockets, having corresponding interaxial distances of 26 mm and 19 mm and pin diameters of 5 mm and 4 mm. A European or Italian type plug without earth may also be inserted in these holes.

[0038] Movement means 21 are provided underneath the engaging area 11 and are designed to be actuated by the insertion of a plug of the second type inside the corresponding series of holes and, when actuated, move at least one of said resilient elements 19, 20 towards the outside of the engaging area. For example, in the case of two second series of holes, the insertion of a plug into one of these second series of holes causes the movement outwards of the closest resilient elements 19, 20.

[0039] This allows the resilient element to be moved away from the zone for engagement of the plug of the second type, preventing interference therewith.

[0040] Figure 3 shows an advantageous embodiment of the movement means 21 associated with a resilient element 19, 20. In this embodiment, the means 21 comprise an actuating element 22 which is movable between a first non-operative position (shown in solid lines in Figure 3) and a second operative position (shown in broken lines). The movement towards the operative position may be advantageously performed against the action of resilient means 23 (for example helical springs) which are suitably arranged.

[0041] As can be clearly seen again in Figure 3, in the operative position the actuating element 22 pushes the resilient element 19 and/or 20 towards the outside of the engaging area by an amount sufficient to move it away from a position where there is undesirable or excessive interference with a plug of the second type which is inserted into the holes 18. Advantageously, the movement of the resilient element occurs by means of flexing of said element. This flexing action may be substantially the same action (although also of a different amount) as that which is produced by the contact with a plug of the first type introduced into the socket 10. This may avoid excess stressing of the resilient elements. Displacement of the actuating element is preferably performed by means of a cam surface 24 which is provided on the element 22 and arranged opposite at least one hole of the said second series of holes 18 such that it is pushed towards the second position by the introduction of a pin 75 of a plug of the second type inside the hole 18. Advantageously, the actuating element may form of or be associated with a safety device for the second series of holes. This safety device is arranged between the inlet openings and the electrical contacts of the holes so as to prevent the accidental introduction of a foreign body (for example, a pointed metal object or a child's finger) inside the holes and contact being made with the internal electrical connections.

[0042] The safety device is advantageously movable between a position for closing and a position for opening the holes (in at least one of the holes there is a dangerous electrical voltage) and the movement into the open position may be advantageously produced by the simultaneous introduction of at least two pins of the plug. This action may be easily associated with the movement of the actuating element 22 which exerts a pushing force on the resilient contact element 19 or 20.

[0043] For example, Figure 4 shows an advantageous embodiment of the socket according to the invention, in which the safety device comprises a bar 25 which is arranged so as to close at least two holes (those which are generally live) of the said second series of holes and which is slidable between the positions for closing and opening the holes. For the movement the bar comprises advantageously at least two cam surfaces 26, 27 which are arranged opposite the at least two holes so as to be pushed sliding towards the opening position by the simultaneous introduction of two pins of a plug of the second type in said at least two holes. In order to prevent the pushing action of only one pin from causing the opening movement, the bar may comprise a rocker arm system which prevents the movement if the pushing force through the two holes is not substantially the same and symmetrical.

[0044] For example, as can be seen in Figure 5, the bar may form a lever with fulcrum in the centre and have on each bottom end a tooth 28 which engages underneath and blocks the sliding movement if the corresponding end of the bar is lower than the other end (in the direction of insertion of the pins). In this way, only a symmetrical thrust exerted by the two pins on the two cam surfaces 26 and 27 of the bar keeps the bar balanced and allows the sliding opening movement.

[0045] In the example of embodiment shown in Figure 3, the cam surfaces are three in number (one for each pin of a three-pin plug) and all three push the bar into the open position. Optionally, the central surface may, however, also not be present when the hole is for the earth pin, since it does not require electrical protection from accidental contact, and may be replaced by a through-hole which is always open.

[0046] As can be clearly seen in Figure 4, advantageously the actuating element 22 for displacement of the resilient element extends transversely with respect to its direction of movement so as to form also the bar 25.

[0047] In this way the movement for safe opening of the holes may be made to coincide with the outwards displacement of the contact elements 19 and 20, and the cam surface 24 may be designed together with, or comprise, the cam surfaces 26 and 27. The introduction of a plug of the second type thus produces release of the safety system and displacement of the earth contacts 19 and/or 20.

[0048] As can be clearly seen again in Figure 4, in the case of a socket with two series of holes for two plugs of the second type, each series may easily have its associated bar for the displacement of the contact earth element which is closest, by designing for example a socket which forms a mirror-image with respect to a plane passing through the central holes intended for engagement with the first type of plug.

[0049] Again in Figure 4 it can be seen how advantageously a safety device 29 may also be provided for the first series of holes, being also movable between a position for closing and a position for opening the holes of the said first series of holes upon simultaneous introduction into the holes of at least two pins of a plug of the first plug type. Preferably, this device 29 comprises a propeller element 30 which rotates about a central axis parallel to the axis of the pins following the simultaneous thrust of the two pins of a plug of the first type in the direction of engagement with the socket. The rotation is advantageously performed by two oppositely directed cam surfaces 31, 32 which produce the rotational thrust upon insertion of two pins into the holes 17. A rocker arm movement about the centre of the propeller element 30 may be envisaged in a similar manner to that described for the bars 25, so as to block rotation of the element 30 (for example by means of teeth, not shown, situated underneath the propeller element) in the case of a non-symmetrical thrust acting on the two cam surfaces 30 and 31.

[0050] Figure 6 shows an exploded view of an advantageous modular structure of a socket according to the invention.

[0051] In this structure the socket 10 comprises rear plastic casing 50 which is closed by a front plastic cover 51 so as to form the box-like container 12. The engage-

ment between rear casing and cover may be advantageously achieved by known elastic snap-engaging means.

[0052] The cover 51 forms the front face which comprises the inset engaging area 11 and the inlet openings of the contact holes.

[0053] Electrical contact assemblies 52, 53 and 54, made of suitably resilient metal with suitable electrical characteristics, are housed inside the casing 50 (as shown in broken lines in Figure 6) so as to emerge on the outside of the casing with their electrical terminals 55, 56, 57 (which together form the known terminals 14 shown in Figure 1 arranged for example on the sides and rear of the socket module).

[0054] Advantageously, as can be clearly seen in Figure 6, each contact assembly is formed by a single shaped metal plate, parallel to the other two plates, which forms all the electrical contacts of the same sign for the pins which can be accommodated inside the multiple socket.

[0055] In particular, the central assembly 52 forms with its ends folded upwards the tongue-like contact elements 19 and 20 and intermediate contacts 58, 59 which are intended to receive elastically the earth pins of the two plugs of the second type which can be accommodated inside the multiple socket shown by way of example.

[0056] The assemblies 53 and 54 may be advantageously designed identical to each other and rotated through 180 degrees on both sides of the central earth assembly 52.

[0057] As can be clearly seen again in Figure 6, the design of the contacts is made easier owing to the fact that the holes in the engaging area for receiving the three plugs are parallel and aligned with each other, the central hole for the second type of plug being intended for the electrical earth connection and being positioned close to one of the resilient earth electrical contacts.

[0058] Again advantageously, as shown in Figure 4, the actuating element and the safety devices may be contained inside an associated support box formed preferably by a base 61 and a closing cover 62 suitably provided with holes through which the pins may pass. The safety devices thus form partitions for closing/opening the through-holes 76 of the support box.

[0059] A robust and efficient safety unit or system 60 is thus formed, preventing the introduction of foreign bodies into the socket and causing at the same time displacement of the earth contact elements.

[0060] The entire unit 60, except optionally the thrust springs 23, made be made of a suitable insulating plastic.

[0061] As can be seen also in Figure 6 for the modular socket shown by example, the safety system 60 may be housed so as to be arranged between the electrical contacts associated with the holes and openings 63 in the engaging area which are intended to receive the pins introduced into the socket so as to reach the electrical contacts associated with the holes.

[0062] The actuating elements 22 advantageously emerge via windows 64 and 65 open laterally on the body of the safety unit 22 for receiving and guiding upwards a bottom part of the resilient elements 19 and 20 (which project from the surface of the engaging area 11 through windows 66, 67), so as to perform with a suitable lever action the outward movement thereof caused by the introduction of a pin of the second type into the corresponding holes 18.

[0063] Figure 7 illustrates in schematic form the insertion of a plug of the first type (indicated generally by 70 in broken lines) inside a socket according to the invention (for the sake of clarity shown only partially).

[0064] As can be seen in Figure 7, the earth contacts 19, 20 slide along the lateral electrical contacts 71 and 72 present on the plug 70, while the two central pins 73 are inserted inside the electrical contacts (not shown in the figure) of the respective holes 17. For the sake of clarity, the plug is shown in broken lines and the safety element 30 is shown in the rest position.

[0065] Figure 8 shows, instead, a view similar to that of Figure 7, but illustrates in schematic form the introduction of two plugs of the second type (indicated generally by 74) inside a socket according to the invention.

[0066] In this case (as shown for the right-hand plug 74, which is partially inserted), the earth contacts 19 and 20 are deviated outwards, while the central pins of the plugs are inserted into the electrical contacts of the respective holes 18.

[0067] As can be noted in Figure 8, even if a deviation completely outside of the zone of interference between the elements 19, 20 and the plugs 74 may be advantageous, it is, however, not strictly necessary and it may be considered sufficient to have an outwards deviation which reduces the friction and which simply avoids the free end of the contact elements 19 and 20 coming up against the front side of the plug body.

[0068] The deviation produced by the movement means 21 may therefore also be supplemented by the sliding action of the plug body on the curved end parts of the contact elements, which are advantageously curved outwards precisely so as to form a sliding surface with a cam effect for their outwards deflection when a plug passes by.

[0069] At this point it is clear how the predefined objects have been achieved. A socket designed according to the principles of the present invention is able to accommodate plugs of the first or second type, optimizing the space and avoiding excessive interference between the resilient earth contact elements of the plug of the first type with the plug (or plugs) of the second type. A socket according to the invention may be easily adapted and used in an installation for distribution of the mains power supply. Moreover, the resilient contact thrust of the resilient earth elements projecting above the engaging zone may also be increased (for example by reducing their distance from each other) so as to improve the electrical contact with the plugs of the first type, without problems of excessive friction, wear or damage to the plugs of the sec-

ond type.

[0070] The earth contact elements may also have their free end part which is kept suitably short, without causing problems of jamming with the plugs of the second type. An excessive lateral projection when engaged is thus avoided.

[0071] Obviously the description above of an embodiment applying the innovative principles of the present invention is provided by way of example of these innovative principles and must therefore not be regarded as limiting the scope of the rights claimed herein. For example, the plugs of the first and second type which can be accommodated may be different from that shown, with modifications of the socket which may now be easily imagined by the person skilled in the art, in order to adapt them to specific requirements of a mains power supply installation, for example depending on the country and the product range used in the installation.

Claims

1. Multiple electrical socket (10) comprising an engaging area (11) intended to receive alternately a first type of plug (70) and at least one second type of plug (74), the engaging area (11) comprising a first series of holes (17) and at least one second series holes (18), said first and second series of holes being intended for the axial insertion therein of pins respectively of plugs of the first and second plug types for electrical contact between socket and plug, edges of said engaging area (11) also being provided with two resilient electrical contact earth elements projecting above the engaging area (11) for making electrical contact with corresponding lateral earth terminals (71, 72) of the first type of plug, **characterized in that** it comprises, underneath the engaging area (11), movements means (21) which are actuated by the insertion of a plug (74) of the second plug type into the corresponding second series of holes (18) and **in that**, when actuated, they move at least one of said resilient elements (19, 20) towards the outside of the engaging area (11).

2. Electrical socket according to Claim 1, **characterized in that** the movement means (21) comprise an actuating element (22) which is movable between a first non-operative position and a second operative position in which it moves the at least one of said resilient elements (19, 20) towards the outside of the engaging area (11), the actuating element (22) having a cam surface (24) which is arranged opposite at least one hole of the said second series of holes (18) so as to be pushed towards the second position by the introduction of one pin of a plug of the second plug type into said at least one hole.

3. Electrical socket according to Claim 2, **characterized in that** the said actuating element (22) forms part of a safety device for the second series of holes, which is movable between a position for closing and a position for opening the holes of the said second series of holes upon introduction into the holes of pins of a plug of the second plug type.

4. Electrical socket according to Claim 3, **characterized in that** the safety device comprises a bar (25) which is arranged so as to close at least two holes of the said second series of holes and which is slidable between said closing and opening positions, the bar comprising cam surfaces (25, 27) arranged opposite the at least two holes so as to be slidingly pushed towards the open position by the simultaneous introduction of two pins of a plug of the second plug type into said at least two holes.

5. Electrical socket according to Claim 4, **characterized in that** the actuating element (22) extends transversely in relation to its direction of movement so as to form the said bar (25).

6. Electrical socket according to Claim 1, **characterized in that** the second series of holes consist of two series of holes (18), each series being close to one of said resilient electrical earth contact elements (19, 20) and each being intended to receive a plug (74) of the second plug type.

7. Electrical socket according to Claim 6, **characterized in that** the two resilient elements are resilient tongues (19, 20) arranged in opposite positions of the engaging area (11) and the first series (17) and two second series (28) of holes are parallel to each other and extend in a direction transverse to the direction of movement of the tongues.

8. Electrical socket according to Claim 1, **characterized in that** it comprises a safety device (30) for the first series of holes, which is movable between a position for closing and a position for opening the holes of the said first series of holes upon simultaneous introduction into the holes of at least two pins of a plug of the first plug type.

9. Electrical socket according to Claims 3 and 8, **characterized in that** the actuating element (22) and the safety devices (25 and 30) are contained in a support box (61, 62) which is housed between electrical contacts (52, 53, 54) associated with the holes and openings in the engaging area (11) which are intended for the introduction into the socket of pins of plugs of the first and second types so as to reach the electrical contacts associated with the holes.

10. Electrical socket according to Claim 1, **characterized in that** it is in the form of a module with a box-

like container (12) comprising the engaging area (11) situated on a first front face thereof, coupling means (13) which are intended to be coupled together with a support frame and which are arranged on sides of the container situated laterally in relation to said first face, and electrical connection terminals (14) which are arranged in the region of a rear face of the container opposite to the said first face.

11. Electrical socket according to Claim 1, **characterized in that** the at least one second series of holes (18) comprises three aligned holes, with the central hole which is intended for the electrical earth connection and which is situated close to one of said resilient electrical earth contact elements (19, 20).

12. Electrical socket according to Claim 1, **characterized in that** the first series of holes (17) comprises two holes which are arranged in the engaging area in a central position with respect to the two resilient electrical earth contact elements (19, 20).

13. Electrical socket according to Claim 1, **characterized in that** the second series of holes (18) forms a double-spaced socket for receiving the plugs of the second plug type with two different distances between the pins.

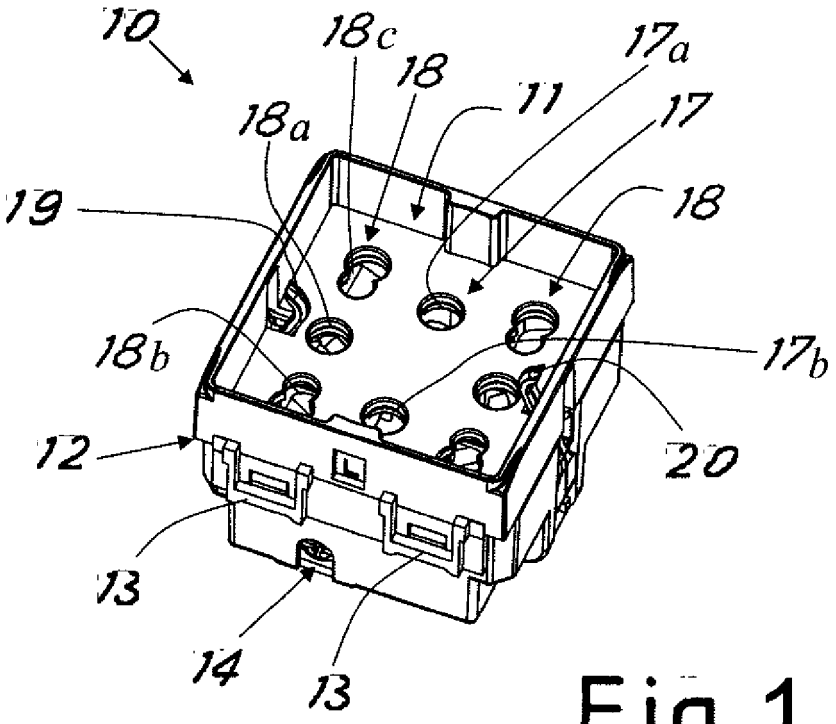

10
18c
18
17a
11
17
18a
19
18
18b
17b
12
20
13
14
13

Fig.1

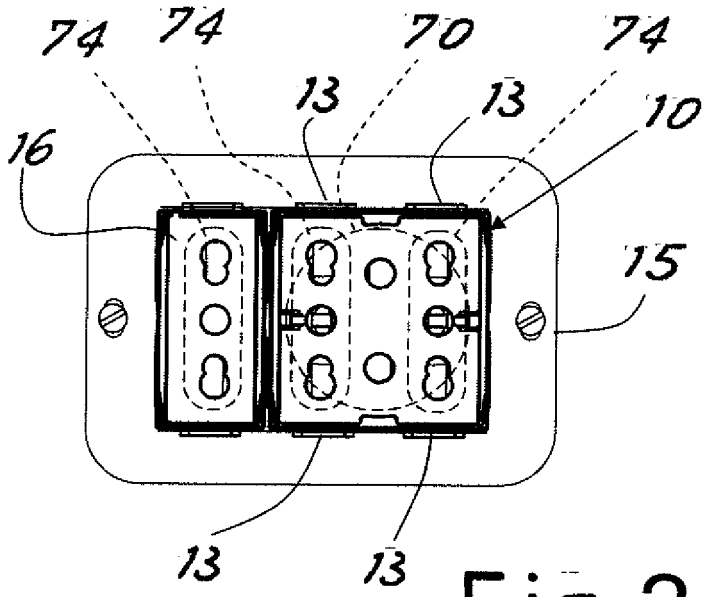

74
74
70
74
13
13
10
16
15
13
13

Fig.2

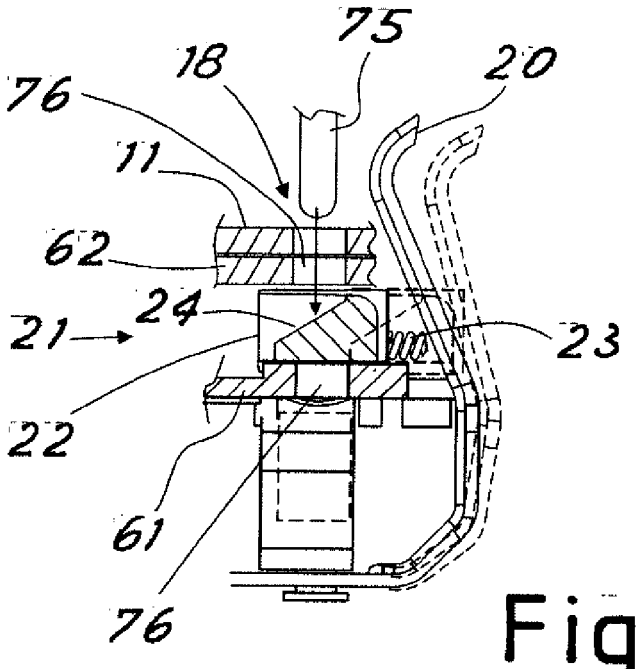

75
18
20
76
11
62
24
21
23
22
61
76

Fig.3

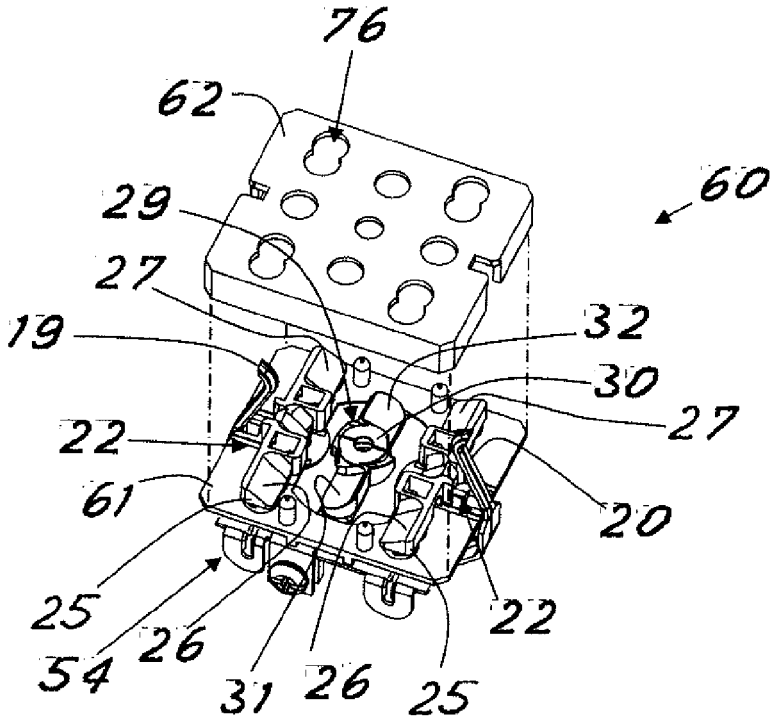

76
62
60
29
27
32
19
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61
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54
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31
26
25

Fig.4

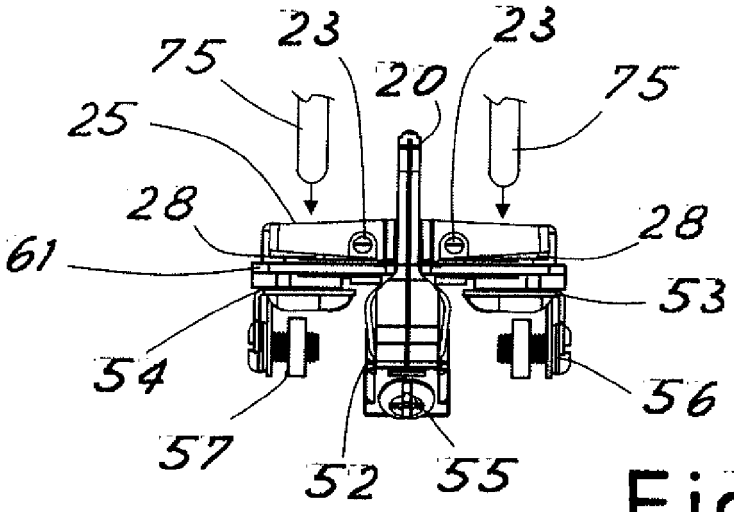

75
23
23
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75
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52
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Fig.5

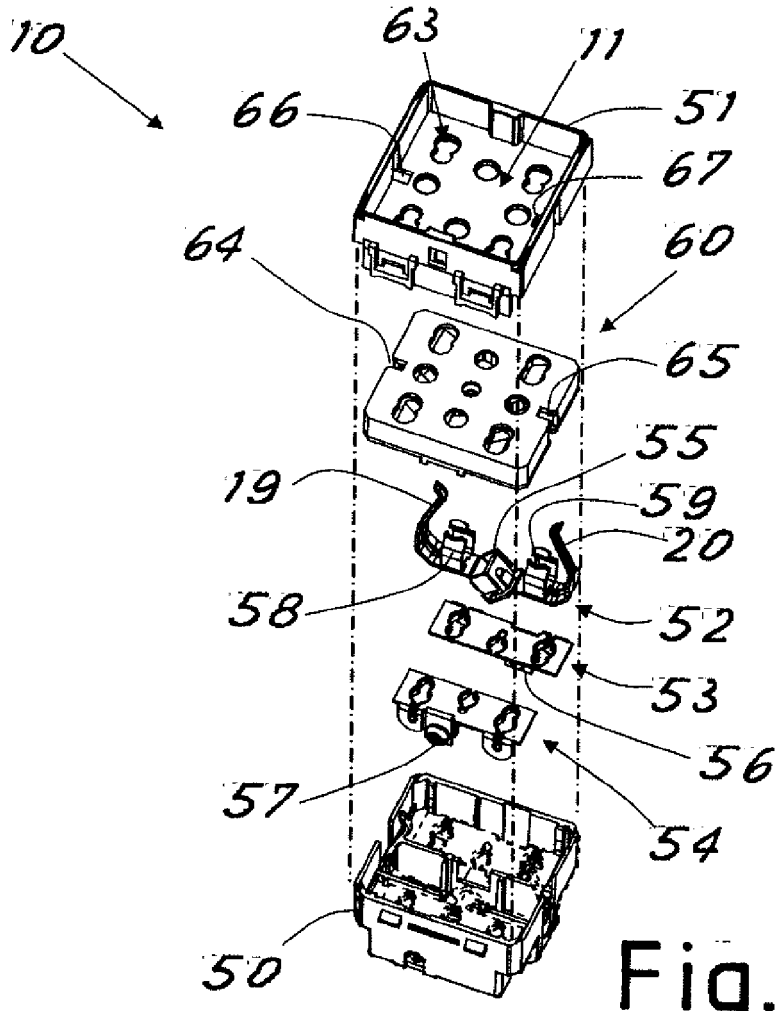

10
63
11
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51
67
64
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65
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19
59
20
58
52
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54
50

Fig.6

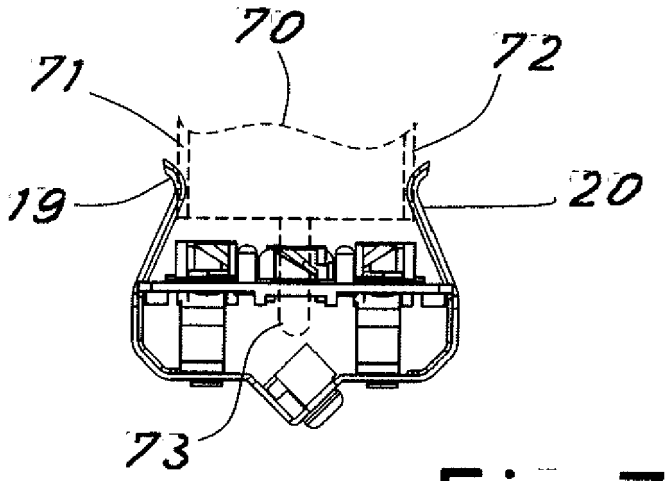


Fig.7

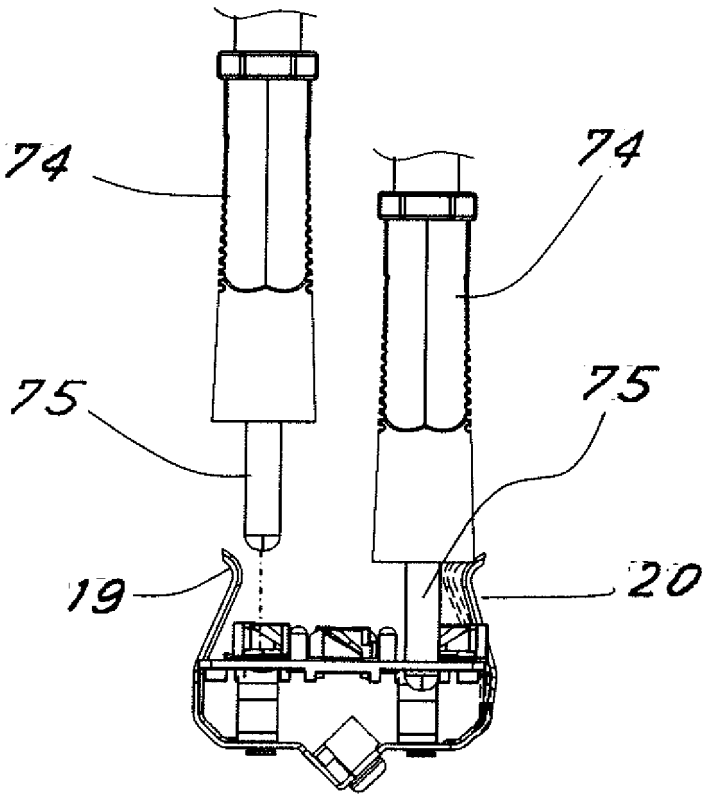


Fig.8

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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 5236

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	IT BG20 120 027 A1 (4 BOX S R L) 13 December 2013 (2013-12-13) * the whole document * -----	1,6-13 2-5	INV. H01R13/453 H01R24/78 H01R27/00
Y	DE 10 2009 060379 B3 (JUNG GMBH ALBRECHT [DE]) 26 May 2011 (2011-05-26) * paragraph [0019]; figures 2,3 * -----	2-5	H01R13/655 ADD. H01R103/00

TECHNICAL FIELDS SEARCHED (IPC)
H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 June 2015	Vautrin, Florent

CATEGORY OF CITED DOCUMENTS

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