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(54) **POWER SOCKET HAVING A BASE PART, AN AESTHETIC COVER, AND A DRIVE MEMBER FOR A MOVABLE COVER OF THE AESTHETIC COVER**

(57) A power socket arrangement (100) comprises a base part (102) and an aesthetic cover (150). The base part (102) has a receiving section at or near one side and/or at the bottom end (108) of the base part (102), adapted to receive and/or fix a first end (112a) of a drive member (112). The drive member (112) has a second end (112b) pivotable between a first position near a bottom end (108) and a second position near the insertion end (106) of the base part (102), the second end (112b) exerting a force directed towards the insertion end (106), essentially perpendicular to a plane covering the bottom end (108), for resiliently moving a linearly slidable cover (156) inside an insertion well (154) of the aesthetic cover (150).

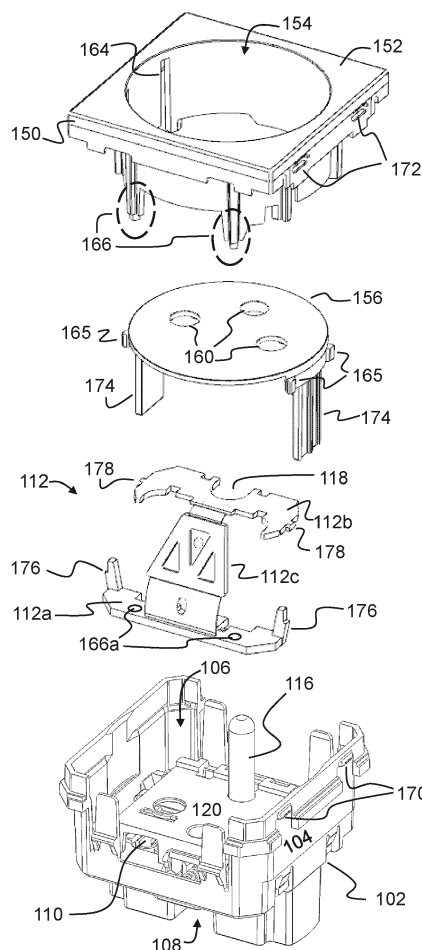


Fig. 5

Description

TECHNICAL FIELD

[0001] The present invention relates to electrical safety arrangements, specifically to mains power sockets or mains power outlets that are configured to receive power plugs in order to connect electrical appliances to a power source, and in particular to a front cover device for such power sockets and power sockets equipped with such front cover device.

BACKGROUND ART

[0002] The safety of electrical installations is a major concern in residential and commercial buildings. Measures taken to increase the safety include installing line breakers, residual current breakers and the like. While some of these measures significantly reduce the risk of fatal electric shocks if a live wire of an electrical installation is inadvertently touched, an even improved protection can be achieved by preventing touching live wires or contacts at all. The wires of electrical installations are typically not exposed. However, power sockets are explicitly meant to provide access to the live wires, or electrical terminals connected therewith, though only using dedicated power plugs.

[0003] Today's power sockets typically comprise a base part that accommodates the electrical terminals and corresponding connection means for connecting electrical wires, and a frame or shell that permits mechanical installation of the power socket in a cable conduit or a pattress or fitting box.

[0004] Once mechanically installed, the power socket can be equipped with an aesthetic cover. The aesthetic cover can be a one-piece part or can comprise a central part that covers the electrical terminals and a framing part that surrounds the central part. In some power sockets the electrical terminals are placed in a recessed part of the power socket, also referred to as insertion well, which may be shaped to receive a corresponding power plug. In this type of power socket, the central part may form or comprise the insertion well.

[0005] In order to prevent body parts or inappropriate tools contacting electrical terminals of power sockets, the electrical terminals are typically located a few millimetres below the surface of an aesthetic cover of the power socket, and are accessible only through small openings that permit passage of protruding contact pins of the power plug.

[0006] Additional covers may provide further protection. One type of covers known since long comprises caps or lids that are placed in the insertion well, which caps, or lids, must be manually removed from the recess prior to inserting the power plug and must be re-inserted when the power plug is removed. This is cumbersome and may require a special tool for removing the cap or lid and, once removed, the cap or lid may be misplaced

and eventually lost. Also, a user may forget to re-insert the cap or lid into the insertion well after removing the power plug from the socket, obviating the purpose of the cap or lid.

[0007] Another known type of cover comprises a cover member that is movable, inside the insertion well of the power plug, between a front position that is typically flush with the front of the aesthetic cover of the power plug and a rear position that is next to the rear end of the insertion well. The movement towards the rear position is caused by the power plug when it is inserted into the power socket. The cover member may be spring loaded to return the cover member to the front position when the power plug is removed from the power socket. This type of cover may comprise many moving parts and may consequently be complex to make and be expensive.

[0008] For further enhanced safety, many of these power sockets come with shutter means covering the electrical terminals. These shutter means may be attached to the aesthetic cover, or a part thereof, or to the base part, the latter variant reducing the risk of touching the terminals even when an aesthetic cover is not installed.

[0009] When the shutter means are a part of the movable cover member, they may cover or close the openings in the movable cover member provided for letting pass the contact pins of the power plug for contacting the electrical terminals of the power socket. In addition to possibly being complex to make and expensive, this type of cover may also be bulky, and it does not provide any protection against touching the electrical terminals when the aesthetic cover is removed from the base part of the power socket.

[0010] Aesthetic covers comprising a central part and a framing part typically offer great flexibility and design choice for the user, allowing, for example, installing a central part that has an insertion well with a moving cover member in those power sockets that are infrequently used and installed in visible places, and installing a - typically less expensive - central cover having a simple, fixed-bottom insertion well in those power sockets that are placed invisibly and/or in which power sockets are connected at almost all times, even within the same multi-socket framing part.

[0011] Inconveniences can arise when the base parts of power sockets are specifically designed for aesthetic covers having a movable cover or aesthetic covers having a fixed-bottom insertion well, respectively, because it is not possible to simply swap the aesthetic covers, and the base parts may not be correctly placed in the electrical installation. It may also be desirable to change aesthetic covers without having to change the entire power socket. Thus, it may be more economical when the aesthetic cover is of low complexity, notably when the aesthetic cover has an insertion well that is provided with a movable cover member, and when the base part can be retrofitted with any kind of aesthetic cover.

SUMMARY OF THE INVENTION

[0012] It is, therefore, desirable, to provide a base part of a power socket assembly, the base part having shutter means for covering electrical contact terminals and being adapted to be matched with a simple-construction aesthetic cover that provides an aesthetically pleasing movable cover of an insertion well or a fixed-bottom aesthetic cover that does not have a cover for an insertion well. It is further desirable to provide a simple-construction aesthetic cover for the base part of the power socket assembly that has a movable cover of an insertion well and that is easy to attach to the base part, and to provide a simple-construction drive member for the power socket assembly for operating the movable cover.

[0013] A base part of a power socket assembly according to a first aspect of the present invention has a frame or shell with an open insertion end for receiving and/or fixing at least a part of an aesthetic cover, and further has a bottom end, opposite of the insertion end. The bottom end may be located in a recess or depression of the frame or shell, when viewed from the insertion end. The aesthetic cover may be a one-piece part or may comprise a central part that is complemented by a framing part at least partly surrounding the central part. Electrical terminals adapted for receiving and contacting contact pins of a power plug are arranged at the bottom end of the base part.

[0014] The electrical terminals may be covered or obfuscated by shutter means when no contact pins of a power plug are inserted therein, for preventing accidental contact with the electrical terminals. The shutter means may be operable by the contact pins of the power plug to permit electrical contact of the latter with the electrical terminals.

[0015] The base part further has at least one receiving section at one side and/or at the bottom end of the base part, which receiving section is adapted to receive and/or fix a first end section of a drive member. One or more drive members may be received in a receiving section. The drive member has a second end section that is pivotable between a first position near the bottom end and a second position near the insertion end. The receiving section is accordingly arranged and adapted to permit the pivoting movement of the drive member. The drive member is adapted to exert a force essentially perpendicular to a plane covering the bottom end of the base part and directed towards the insertion end. The receiving section may be adapted to lock the received first end section of the drive member, keeping it securely in place. Releasing and removing the drive member from the receiving section, if needed, may be possible using appropriate tools. Alternatively, the locking means may be provided with features that permit unlocking by hand. To this end the receiving section may comprise members of a click-connection or snap-in connection that cooperate with correspondingly shaped parts or members of the first end section of the drive member, e.g., recesses or

protrusions. Alternatively, the receiving section may comprise parts shaped to cooperate with members of a click-connection or snap-in connection of the first end section of the drive member.

[0016] In one or more embodiments the base part has means for releasably locking the second end section of the drive member in the first position near the bottom end of the base part. Locking the second end section may be useful in case the aesthetic cover is removed after an initial installation while the drive member remains attached to the base part. In this case, the power socket remains usable even without an aesthetic cover attached to it without the drive member encumbering inserting a power plug. Also, attaching an aesthetic cover not having a movable cover as a replacement of a previously removed aesthetic cover having a movable cover may be facilitated.

[0017] In preferred embodiments the locked second end section of the drive member may be automatically unlocked when an aesthetic cover having a movable cover is mounted to the base part, while it may remain locked in case an aesthetic cover not having a movable cover is mounted. To this end a part of the aesthetic cover received in the insertion end may operate a mechanism to unlock or release the second end of the drive member, e.g., by operating a snap hook that locks the second end of the drive member, by pushing the second end of the drive member away from a recess in which it is locked, or the like.

[0018] In one or more embodiments the means for releasably locking the second end section of the drive member in the first position are part of the shutter means.

[0019] An aesthetic cover according to a second aspect of the present invention, adapted to be received by a base part of a power socket assembly as presented above, comprises a front plate, an insertion well for receiving a power plug, and a cover, inside the insertion well, having a front surface with openings for letting pass contact pins of a power plug. The cover is movable in the insertion well between a position distal from the front plate and a position, in which the front plate and the front surface of the cover are essentially flush aligned. The expression flush aligned generally means that the front plate and the front surface lie in the same plane but may comprise alignments where minor offsets between the two outer surfaces may be present in either direction. The cover is supported force-free inside the insertion well, i.e., it does not take a default position within its range of motion unless forced by a drive member. A rear surface of the movable cover is configured for contacting a second end section of a drive member that imparts a force exerted by the drive member, which resiliently drives the movable cover towards the front plate of the aesthetic cover. The rear surface of the movable cover is further configured for sliding contact with the second end section of the drive member. The sliding contact allows for a sliding movement of the second end section of the drive member from a closed position, in which the second end

section of the drive member closes or obturates the openings in the movable cover, when the cover is flush aligned with the front plate, to an opened position, in which the openings are not covered or obturated when the cover is positioned distal from the front plate.

[0020] In one or more embodiments the aesthetic cover comprises guiding means for linearly guiding the movable cover inside the insertion well between the position distal from the front plate of the aesthetic cover and the position, in which the front plate and the front surface of the movable cover are flush aligned. The guiding means may comprise one or more protrusions, recesses or slots at the aesthetic cover that slidably engage with corresponding slots, recesses or protrusions of the movable cover. Two or more guiding means may be arranged at the circumference of the insertion well and the movable cover. The guiding means may alternatively or additionally comprise slots, recesses, protrusions or the like at the movable cover that slidably engage with corresponding shapes of the base part.

[0021] In one or more embodiments the aesthetic cover comprises holding means for at least temporarily holding the first end section of the drive member at or near a backside end of the aesthetic cover, opposite to the front plate, such that the second end section of the drive member maintains the movable cover flush aligned with the front plate of the aesthetic cover when the aesthetic cover is not mounted to a base part. This may serve for keeping the aesthetic cover, the drive member and the movable cover together while not installed in a base part, e.g., in a set or kit that is commercially distributed.

[0022] In one or more embodiments the holding means are arranged to transfer and fix the first end section of the drive member to the receiving section of the base part upon initial mounting of the aesthetic cover to the base part. In other words, prior to the first mounting of the aesthetic cover to the base part, the movable cover is maintained in a flush aligned position by the drive member, the first end section of the drive member being held in holding means provided at or near the backside of the aesthetic cover. In this state or arrangement, the aesthetic cover may be commercially available to professionals and end users. Upon installing or mounting the aesthetic cover to the base part the drive member is transferred and affixed to the base part. If the aesthetic cover is removed at a later time the drive member remains attached or mounted to the base part. The drive member may be manually removed from the base part, if no longer needed or in case of replacement, and the removal may require tools. The second end section of the drive member may be releasably locked in a position near the bottom end of the base part, which may facilitate re-inserting the previously removed aesthetic cover, or inserting an aesthetic cover without a movable cover. Locking the second end section of the drive member near the bottom end of the base part may also facilitate inserting a power plug into the power socket even when the aesthetic cover is removed, should the need arise.

[0023] In one or more embodiments the holding means hold the first end section of the drive member by means of friction, by means of a click-connection or a snap-in connection, or by means of a frangible blocking part. The click-connection may comprise a stub or pin at or near the backside end of the aesthetic cover, the stub or pin having a shallow rim or shallow depression that engage with a correspondingly shaped resilient part of the first end section of the drive member. The frangible blocking part may comprise a thin rim or a small protrusion at an end of a pin or stub that temporarily holds the first end section of the drive member attached to or near the backside end of the aesthetic cover.

[0024] In one or more embodiments locking means are provided on the underside of the movable cover, which locking means engage with a front edge of the second end section of the drive means when the movable cover is flush aligned with the front plate of the aesthetic cover. The locking means may prevent a movement of the movable cover unless the second end section is first moved into the insertion well by a small distance, e.g., by the contact pins of a power plug.

[0025] According to a third aspect of the present invention, a drive member that is adapted to be received in the receiving section of the base part of the power socket assembly has a first end section adapted to be received in a receiving section of the base part of the power socket and/or to a holding means of an aesthetic cover, both as described hereinbefore. The drive member further has a second end section, opposite to the first end section, and a central section arranged between the first end section and the second end section. At least the first end section is resiliently coupled to the central section, the resilient coupling being adapted to provide a pivoting movement of the central section with respect to the first end section. In variants of the drive member the central section and the second end section may be resiliently coupled in a similar fashion. At least some sections of the drive member, e.g., the section resiliently coupling the first end section and the central section and/or the section resiliently coupling the second end section and the central section may function like a flat spring. The central section itself may also provide some resilience.

[0026] The first end section of the drive member may be adapted to cooperate with the receiving section of the base part of the power socket for locking therein, securing it in place in the receiving section. Manual removal, if needed, may be possible using tools for unlocking. The first end section of the drive member may comprise members of a click-connection or snap-in connection that cooperate with correspondingly shaped parts or members of the receiving section. Alternatively, the first end section of the drive member may comprise parts shaped to cooperate with members of a click-connection or snap-in connection of the receiving section.

[0027] In one or more embodiments the first end section of the drive member is adapted to be mountable, at least temporarily, to holding means of the aesthetic cov-

er, by means of friction, by means of a click-connection or a snap-in-connection, or by means of a frangible blocking part. The click-connection may comprise a stub or pin at or near the backside end of the aesthetic cover, the stub or pin having a shallow rim or shallow depression that engage with a correspondingly shaped resilient part of the first end section of the drive member. The frangible blocking part may comprise a thin rim or a small protrusion at an end of a pin or stub that temporarily holds the drive member attached to or near the backside end of the aesthetic cover.

[0028] In one or more embodiments the second end section of the drive member has a section of extended width that is wider than the central section, preferably at least as wide as a distance between the outer edges of two openings in the movable cover of the aesthetic cover. The second end section of the drive member further has a length that is at least as long as a diameter of the openings. The extended-width section of the second end section of the drive member forms a surface configured for gliding against the rear surface of the movable cover. The extended-width section is adapted to cover or obturate the openings in the movable cover in one position.

[0029] In one or more embodiments at least one protrusion or embossment is arranged at the surface configured for gliding against the rear surface of the movable cover. The at least one protrusion is configured to engage with at least one of the openings of the cover, for blocking the gliding of the surface against the rear surface of the movable cover whenever engaged. The at least one protrusion or embossment may prevent moving the movable cover when engaged in at least one of the openings in the movable cover and may be disengaged from the opening by the contact pins of the power plug.

[0030] In one or more embodiments the drive member is a one-piece part made of a resilient, electrically insulating material. Alternatively, the drive member is a two or more-piece part having a resilient core that is at least partly covered or sheathed by an electrically insulating material.

[0031] A power socket assembly comprises a base part in accordance with the first aspect of the invention or embodiments thereof, a drive member in accordance with the third aspect of the invention or embodiments thereof, and an aesthetic cover in accordance with the second aspect of the invention or embodiments thereof.

[0032] More specifically, the base part of the power socket arrangement is arranged to receive an aesthetic cover having a movable cover for an insertion well for a power plug, the cover being supported force-free in the insertion well such that it can slide between a position in which the movable cover and the front of the aesthetic cover are flush aligned and a position in which the movable cover is located at the rear end of the insertion well or can be removed at the rear end of the insertion well. The base part is further arranged to receive a drive member at one side and/or at the bottom end of a space provided for receiving the insertion well of the aesthetic cov-

er, which drive member exerts a force on the movable cover that pushes the movable cover towards the front plane of the aesthetic cover.

[0033] The drive member provides a resilient force that drives the movable cover towards the front plate of the aesthetic cover. At the same time, a part of the drive member covers or obturates the openings for the pins in the movable cover when the cover is flush aligned with the front plate of the aesthetic cover. More specifically, the second end section of the drive member is positioned to be intersected by insertion axes of the electrical terminals when the movable cover is flush aligned with the front plate of the aesthetic cover, while the insertion axes do not intersect when the movable cover is positioned distal from the front plate of the aesthetic cover. The insertion axes correspond to the axes along which contact pins of a power plug are inserted in the electrical terminals.

[0034] The power socket arrangement presented hereinbefore provides a simple and low maintenance way of resiliently moving a cover inside an insertion well of a power socket. When no power plug is inserted, the second end of the drive member covers or obturates the openings provided for letting pass the contact pins of the power plug. The drive member thus not only provides a force that moves the cover into a position where it is flush aligned with the front plate of the aesthetic cover but also acts for further improving the aesthetic appearance of the power socket arrangement when no power plug is inserted. In addition to the improved aesthetics obturating the openings in the cover prevent dust or objects from easily entering the insertion well behind the movable cover. This includes preventing access to the shutter protection means that covers the electrical terminals of the power socket. The present invention thus improves the reliability and touch-protection of the power socket over previous solutions in a simple and efficient manner.

BRIEF DESCRIPTION OF DRAWINGS

[0035] In the following section the invention will be described in greater detail with reference to the attached drawings, in which

- Fig. 1 shows an isometric view of a power socket arrangement according to the invention with a movable cover flush aligned with the front plate of an aesthetic cover,
- Fig. 2 shows an isometric view of the power socket arrangement of figure 1 with the movable cover in a position distal from the front plate of the aesthetic cover,
- Fig. 3 shows an isometric view of the aesthetic cover with the movable cover and the drive member attached to the backside of the aesthetic cover,
- Fig. 4 shows an isometric view of the base part of the power socket,

- Fig. 5 shows major elements of the power socket arrangement in an isometric exploded view,
- Fig. 6 shows isometric views of back sides of the aesthetic cover, the movable cover and the drive member,
- Fig. 7 shows an isometric, partially cutaway view of the power socket arrangement,
- Fig. 8 shows an isometric view of the base part of the power socket arrangement with the drive member mounted in a receiving section,
- Fig. 9 shows an isometric view of a first embodiment of the drive member,
- Fig. 10 shows an isometric view of the underside of the first embodiment of the drive member,
- Fig. 11 shows an isometric view of a second embodiment of the drive member, and
- Fig. 12 shows an isometric view of the underside of the second embodiment of the drive member.

[0036] In the figures of the drawings like or similar elements are referenced using the same reference signs.

DESCRIPTION OF EMBODIMENTS

[0037] Figure 1 shows an isometric view of a power socket arrangement 100 according to the invention with a movable cover 156 flush aligned with the front plate 152 of an aesthetic cover 150. The aesthetic cover 150 is attached or mounted to a base part 102. Two openings 160 in the movable cover 156 are covered or obturated from the underside by a second end 112b of the drive member 112 (both not visible in the figure). A third opening 160 is obturated by an earth pin 116, of which only the very tip is visible.

[0038] Figure 2 shows an isometric view of the power socket arrangement 100 of figure 1 with the movable cover 156 in a position distal from the front plate 152 of the aesthetic cover 150. In this figure the second end 112b of the drive member 112 (both not visible in the figure) no longer covers the openings 160, of which only one is visible, and shutter protection means covering the electrical terminals (not shown in the figure) can now be accessed. The earth pin 116 is now fully visible, as is the insertion well 154 that receives a power plug (not shown in the figure). The exemplary insertion well 154 shown in the figure has a generally circular cross section, but other shapes are likewise conceivable, depending on the respective local or regional plug and socket standards. The tubular side walls of the insertion well 154 comprise slots that serve as guiding means 164 for assuring a linear movement of movable cover 156 inside the insertion well 154. The movable cover has corresponding protrusions (not shown in the figure) that slidably engage with the slots.

[0039] Figure 3 shows an isometric view of the aesthetic cover 150 with the movable cover 156 and the drive member 112 attached to the backside of the aesthetic cover 150. This may correspond to the configuration of

the parts that is commercially available. In the figure the movable cover 156 is flush aligned with the front plate 152 of the aesthetic cover 150. Only the first end section 112a of the drive member 112 and a small part of the central section 112c are visible in the figure. The first end section 112a of the drive member 112 is held by holding means 166, located at the backside end of the aesthetic cover 150. The holding means 166, being engaged with the first end section 112a of the drive member 112, are not fully visible in the figure, and are found inside the dashed-line ovals. Latches 172 are provided at the aesthetic cover 150 that engage with corresponding hooks 170 at the base part 102 for attaching the aesthetic cover 150 to the base part 102.

[0040] Figure 4 shows an isometric view of the base part 102 of the power socket 100. The electrical terminals 110 that are arranged at the bottom end 108 of the base part 102 inside the shell or frame 104 are covered by shutter means 120, which prevent accidentally touching the electrical terminals 110. The earth pin 116 is fully visible inside the frame or shell 104 of the base part 102. It is readily apparent in the figure that a power plug may be inserted from an insertion end 106 of the frame or shell 104, but that no insertion well of a particular shape is present. Rather, an aesthetic cover 150 having a suitably shaped insertion well is meant to be inserted into the frame or shell 104 from the insertion end 106, for completing the power socket. The aesthetic cover 150 may be removably attached to the base part 102, e.g., by a snap-in connection, screws or the like. In the figure, protruding hooks 170 of a snap-in connection are visible at the insertion end 106 of the frame or shell 104 which engage with corresponding latches 172 of the aesthetic cover 150.

[0041] Figure 5 shows major elements of the power socket arrangement 100 in an isometric exploded view. In the figure the base part 102 and its elements shown correspond to those discussed with reference to figure 4. The aesthetic cover 150 and the movable cover 156 are shown separated from each other. The protrusions 165 of the movable cover act as a part of guiding means provided for ensuring a linear movement and, when inserted in the insertion well 154 of the aesthetic cover 150, slidably engage with corresponding slots 164. The slide members 174 also form part of the guiding means and slidably engage with corresponding parts of the base part 102 (not shown in the figure). The holding means 166 of the aesthetic cover 150 are visible in this representation, as are the holes 166a in the first end section 112a of drive member 112 in which they are at least temporarily received. The first end section 112a of drive member 112 further has locking members 176 that engage with a correspondingly shaped part of the base part 102 when inserted (not visible in the figure). The locking members 176 provide a secure seat of the drive member 112 in the base part 102, exceeding the holding capability provided by the holding means 166 of the aesthetic cover 150. This effectively results in a transfer of the drive mem-

ber 112 from the aesthetic cover 150 to the base part 102 upon bringing both parts together for the first time. The drive member 112 may remain engaged with the holding means 166 until the aesthetic cover 150 is removed from the base part 102 for the first time. The transfer of the drive member 112 from the aesthetic cover 150 to the base part 102 may only then effectively be completed. The first end section 112a of the drive member 112 is resiliently coupled to one end of a central section 112c of the drive member 112, and an opposite end of the central section 112c is resiliently coupled to a second end section 112b of the drive member 112. In the exemplary embodiment shown in the figure the drive member 112 comprises a resilient core element, e.g., a flat spring made from a metal sheet or any other suitable material, to which the first and second end sections 112a, 112b are joined, e.g., by injection moulding, riveting or the like. The resilience of the central section 112c is controlled by at least partially overmoulding the central part with structures that generate greater stiffness. The second end section 112b has a notch 118 that accommodates earth pin 116 when second end section 112b of the drive member 112 is pushed into a position close to the bottom end 108 of the base part 102. In this position the central section 112c and the second end section 112b lie essentially flat near or against the shutter means 120. The second end section 112b may comprise guiding means 178 that engage with corresponding recesses (not shown in the figure) provided on the underside of the movable cover 156, for guiding the second end 112b in a movement substantially parallel to the underside of the movable cover 156. At the same time the guiding means 178 transfer the force that is imparted onto the second end 112b of the drive member 112 by the pins of a power plug, onto the movable cover 156, for moving it against the force provided by the drive member 112.

[0042] Figure 6 shows isometric views of back sides of the aesthetic cover 150, the movable cover 156 and the drive member 112. This view illustrates how the movable cover 156 may be inserted, from the rear side of the aesthetic cover 150, into the insertion well 154 of the aesthetic cover 150. Also, in this view the holding means 166 of the aesthetic cover 150 are well visible. The holding means may be square pegs that are inserted in round holes 166a in the first end section 112a of the drive member 112. If the dimensions are properly chosen, the square pegs will be pinched in the round holes, providing a temporary clamp-connection that is separated when the drive means 112 are locked in the base part 102 and the aesthetic cover 150 is removed from the base part for the first time. As the aesthetic cover 150 and/or the first end section 112a of the drive member 112 may be made from plastic the square pegs and/or the holes 166a may be deformed upon bringing the parts together for the first time, and the pinch-connection may be weaker or even inoperable once the parts are separated for the first time. The underside 162 of the movable cover 156 may have locking means 180, e.g., wedges or protrusions,

that engage with a front edge 182 of the second end section 112b of the drive means 112 when the second end 112b lies essentially flat against the underside 162 and prevent a movement of the movable cover 156 unless the second end section 112b is first moved into the insertion well 154 by a small distance. The second end 112b of the drive member 112 may lie essentially flat against the underside 162 when the movable cover 156 is flush aligned with the front plate 152.

[0043] Figure 7 shows an isometric, partially cutaway view of the power socket arrangement 100. This view illustrates how the second end section 112b of the drive member 112 slidably rests against the underside of the movable cover 156, and how the resilient coupling between the second end section 112b and the central section 112c as well as between the central section 112c and the first end section 112a provides a force that pushes the movable cover into the direction of the front plate 152 of the aesthetic cover 150. Blocking means may be provided for limiting the movement of the movable cover 156 in the insertion well 154 when the movable cover is flush aligned with the front surface of the front plate 152. The blocking means may be the protrusions 165, which are not visible in this figure but are visible, e.g., in figure 5, and which engage with the guiding slits 164. This view also shows how the central section 112c of the drive member 112 is essentially not bent thanks to the reinforcement that is overmoulded onto it.

[0044] Figure 8 shows an isometric view of the base part of the power socket arrangement 100 with the drive member 112 mounted in a receiving section. This view essentially shows how the first end section 112a of the drive member 112 remains locked in place in the base part 102 when the aesthetic cover is removed. As the second end section 112b of the drive member 112 stands in an upper position, inserting a power plug may be cumbersome. In order to permit easier insertion of a power plug even when the aesthetic cover has been removed from the power socket assembly 100, retention means (not shown in the figure) may be provided for keeping the central section 112c and the second end section 112b of the drive member 112 in the position close to the shutter means 120 of the base part 102.

[0045] Figures 9 and 10 show isometric views of the top side and the underside, respectively, of a first exemplary embodiment of the drive member 112. In this exemplary embodiment the drive member 112 is a one-piece part, preferably made from an electrically insulating material such as plastic. The overall concept of the drive member is the same as described before, with a first end section 112a, a second end section 112b and a central section 112c. The respective end sections 112a and 112b are resiliently coupled to the central section 112c. As the drive member is a one-piece part, and plastic may only have a limited resilient flexibility, the coupling sections 112d are implemented in a serpentine fashion, providing a greater flexibility while maintaining the resilience. The other elements shown in the figure, i.e., the notch

118, the holes 166a, the locking member 176, and the guiding means 178, as well as their respective functions, have already been described with respect to other figures and will not be discussed again.

[0046] Figures 11 and 12 show isometric views of the top side and the underside, respectively, of a second embodiment of the drive member 112. In this exemplary embodiment the drive member 112 comprises a core part 112e that extends between and links the first end section 112a and the second end section 112b. The core part 112e preferably is made from a resilient material, e.g., a flexible metal sheet, and provides the resilient coupling of the respective end sections and the central section. In order to provide a desired degree of rigidity, the core part 112e may be overmoulded in the central section 112c. The coupling sections 112d are preferably not overmoulded for maintaining a desired degree of resilience.

[0047] While the invention has been described hereinbefore with reference to the exemplary embodiments shown in the drawings, in particular with regard to a power socket of the CEE 7/5 type, it will be obvious to the skilled person that the invention is not limited thereto, and that it is likewise applicable with other types of power sockets including, but not limited to, power sockets of the CEE 7/3 type.

REFERENCE SIGNS LIST

[0048]

100	power socket assembly
102	base part
104	frame/shell
106	insertion end
108	bottom end
110	terminal
112	drive member
112a	first end section
112b	second end section
112c	central section
112d	coupling section
112e	core part
116	earth pin
118	notch
120	shutter means
150	aesthetic cover
152	front plate
154	insertion well
156	movable cover
160	opening
162	rear surface
164	slit
165	protrusion
166	holding means
166a	holes
170	hook
172	latch
174	slide member

176	locking member
178	guiding means
180	locking means
182	front edge

Claims

1. Base part (102) of a power socket assembly (100) comprising a frame or shell (104), the frame or shell (104) having an open insertion end (106) for receiving and/or fixing at least a part of an aesthetic cover (150), and further having a bottom end (108) located opposite to the insertion end (106), wherein electrical terminals (110) adapted for receiving and contacting contact pins of a power plug are arranged at the bottom end (108) of the base part (102), **characterized in that** the base part (102) has a receiving section at one side and/or at or near the bottom end (108) of the base part (102), the receiving section being adapted to receive and/or fix a first end section (112a) of a drive member (112), the drive member (112) having a second end section (112b) pivotable between a first position near the bottom end (108) and a second position near the insertion end (106), the drive member (112) being adapted to exert a force that is essentially perpendicular to a plane covering the bottom end (108) and that is directed towards the insertion end (106), the receiving section being arranged and adapted in the base part (102) so as to permit the pivoting movement of the drive member (112).
2. Base part (102) according to claim 1, further having means for locking the first end section (112a) of the drive member (112) in the receiving section and/or having means for releasably locking the second end section (112b) of the drive member (112) in the first position near the bottom end (108).
3. Base part (102) according to claim 1 or 2, further having shutter means (120) arranged at the bottom end (108) of the base part (102), the shutter means (120) obturating the electrical terminals (110) when no contact pins of a power plug are inserted therein.
4. Base part (102) according to claim 3, wherein the means for releasably locking the second end section (112b) of the drive member (112) in the first position are part of the shutter means (120).
5. Aesthetic cover (150) of a power socket assembly, the aesthetic cover (150) being adapted to be received by a base part (102) according to one of claims 1 to 4, the aesthetic cover (150) comprising a front plate (152), an insertion well (154) for receiving a power plug, and a cover (156) having a front surface with openings (160) for letting pass contact

- pins of a power plug, the cover (156) being movable in the insertion well (154) between a position distal from the front plate (152) and a position, in which the front plate (152) and the front surface of the cover (156) are flush aligned, **characterized in that** the cover (156) is supported force-free inside the insertion well (154), and **in that** a rear surface of the movable cover (156) is configured for contacting a second end section (112b) of a drive member (112) that imparts a force exerted by the drive member (112) which resiliently drives the movable cover (156) towards the front plate (152) of the aesthetic cover (150), the rear surface further being configured for sliding contact with the second end section (112b) of the drive member (112), the sliding contact allowing for a sliding movement of the second end section (112b) of the drive member (112) from a closed position, in which the openings (160) of the movable cover (156) are closed or obturated, when the cover (156) is flush aligned with the front plate (152), to an opened position, in which the openings (160) are not covered or obturated when the cover (156) is positioned distal from the front plate (152).
6. Aesthetic cover (150) according to claim 5, further comprising at least one guiding means (164) for linearly guiding the movable cover (156) inside the insertion well (154) between the position distal from the front plate (152) of the aesthetic cover (150) and the position, in which the front plate (152) and the front surface of the movable cover (156) are flush aligned.
 7. Aesthetic cover (150) according to claim 5 or 6, further comprising holding means (166) for at least temporarily holding a first end section (112a) of the drive member (112) at or near a backside end of the aesthetic cover (150), opposite to the front plate (152), such that the second end section (112b) of the drive member (112) maintains the movable cover (156) flush aligned with the front plate of the aesthetic cover (150) while not received by a base part (102) of a power socket assembly (100).
 8. Aesthetic cover (150) according to claim 7, wherein the holding means (166) are arranged to transfer and affix the first end section (112a) of the drive member (112) to the receiving section of the base part (102) upon initial mounting of the aesthetic cover (150) to the base part (102).
 9. Aesthetic cover (150) according to claim 8, wherein the holding means (166) hold the drive member (112) by means of friction, by means of a click-connection or a snap-in connection or by means of a frangible blocking part.
 10. Aesthetic cover (150) according to any one or more of claims 5 to 9, wherein locking means (180) are provided on the underside (162) of the movable cover (156), which locking means (180) engage with a front edge (182) of the second end section (112b) of the drive means (112) when the movable cover (156) is flush aligned with the front plate (152) and prevent a movement of the movable cover (156) unless the second end section (112b) is first moved into the insertion well (154) by a small distance.
 11. Drive member (112) of a power socket assembly, the drive member having a first end section (112a) adapted to be received in the receiving section of a base part (102) of the power socket assembly (100) according to one of claims 1 to 4, and/or to be at least temporarily received by a holding means (166) of an aesthetic cover (150) according to one of claims 5 to 10, the drive member (112) further having a second end section (112b), opposite of the first end section (112a), and a central section (112c) arranged between the first end section (112a) and the second end section (112b), at least the first end section (112a) being resiliently coupled to the central section (112c), wherein the resilient coupling is adapted to provide a pivoting movement of the central section (112c) with respect to the first end section (112a).
 12. Drive member (112) according to claim 11, wherein the first end section (112a) is adapted to be mountable to the holding means (166) of the aesthetic cover (150) by means of friction, by means of a click-connection or by means of a frangible blocking part, and is adapted to be releasably mountable to the receiving section of the base part (102).
 13. Drive member (112) according to claim 11 or 12, wherein the second end section (112b) has a section of extended width that is wider than the central section (112c), preferably at least as wide as a distance between the outer edges of two openings (160) in the movable cover (156) of the aesthetic cover, and that has a length that is at least as long as a diameter of the openings (160), the extended-width section forming a surface configured for gliding against the rear surface of the movable cover (156).
 14. Drive member (112) according to claim 13, wherein at least one protrusion or embossment is arranged at the surface configured for gliding against the rear surface of the movable cover (156), which at least one protrusion or embossment is configured to engage with at least one of the openings (160) of the cover (156), for blocking the gliding of the surface against the rear surface of the movable cover (156) whenever engaged.
 15. Drive member (112) according to one of claims 11 to 14, wherein the drive member (112) is a one-piece

part made of a resilient, electrically insulating material or a two or more piece part having a resilient core that is at least partly covered or sheathed by an electrically insulating material.

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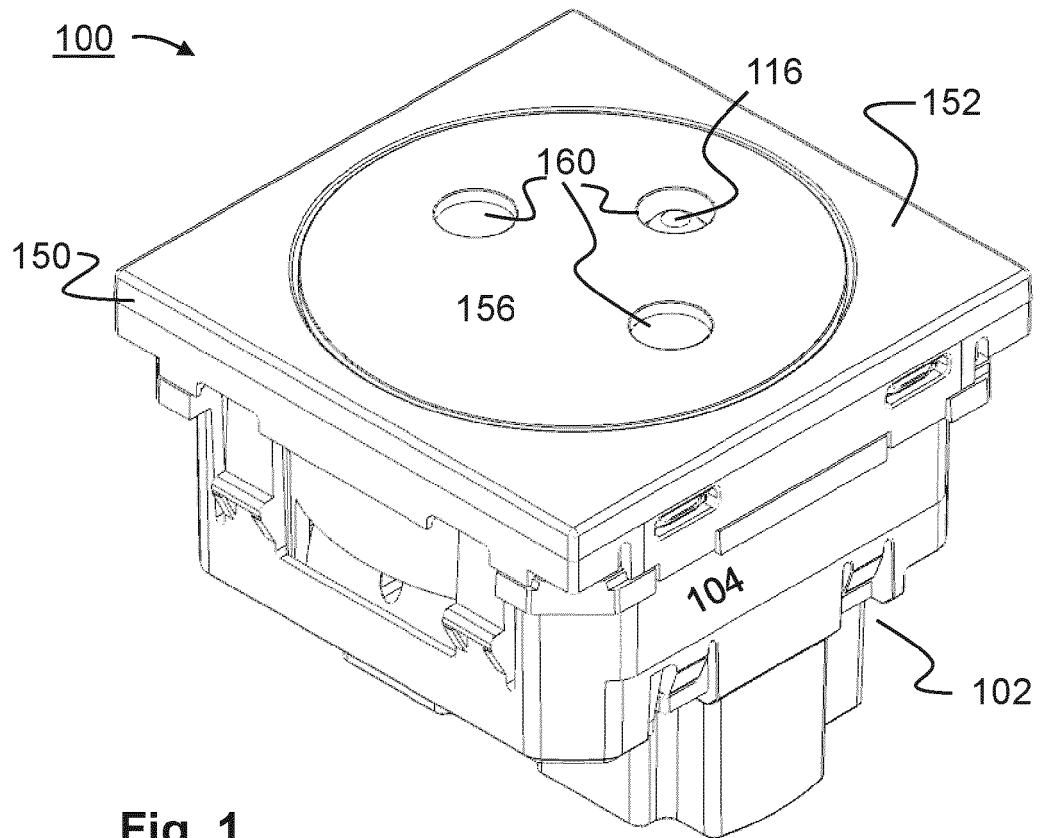


Fig. 1

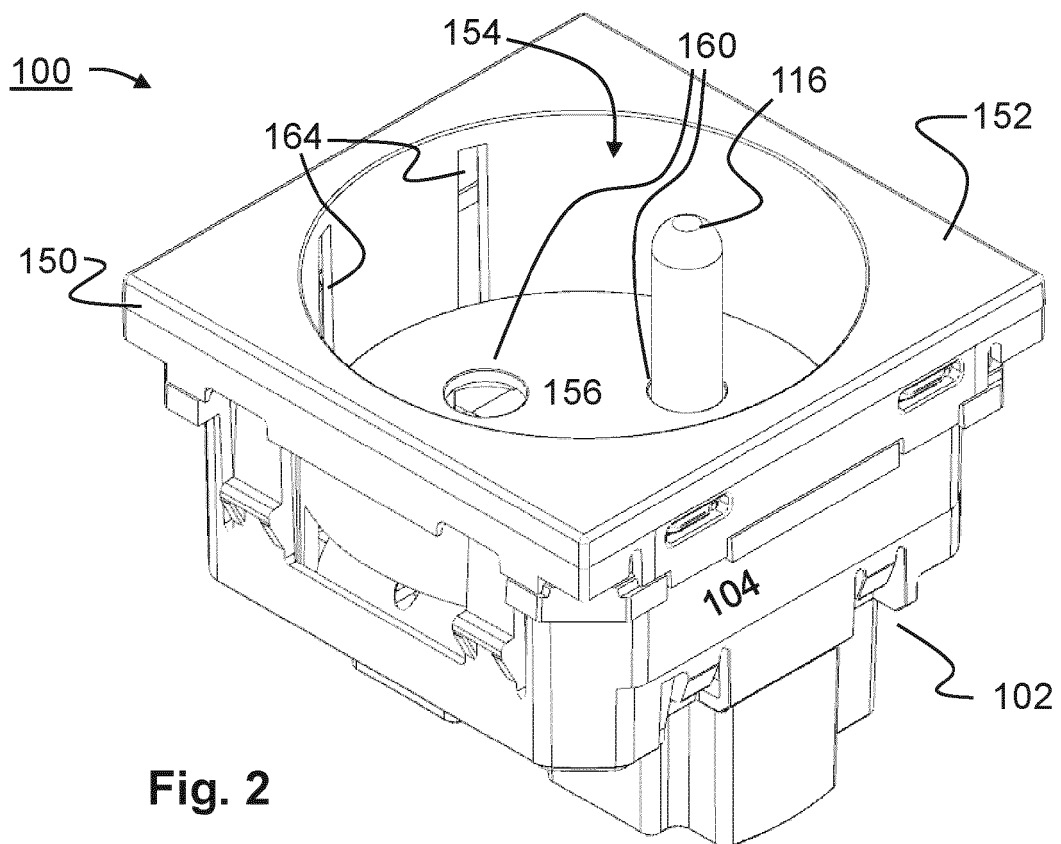
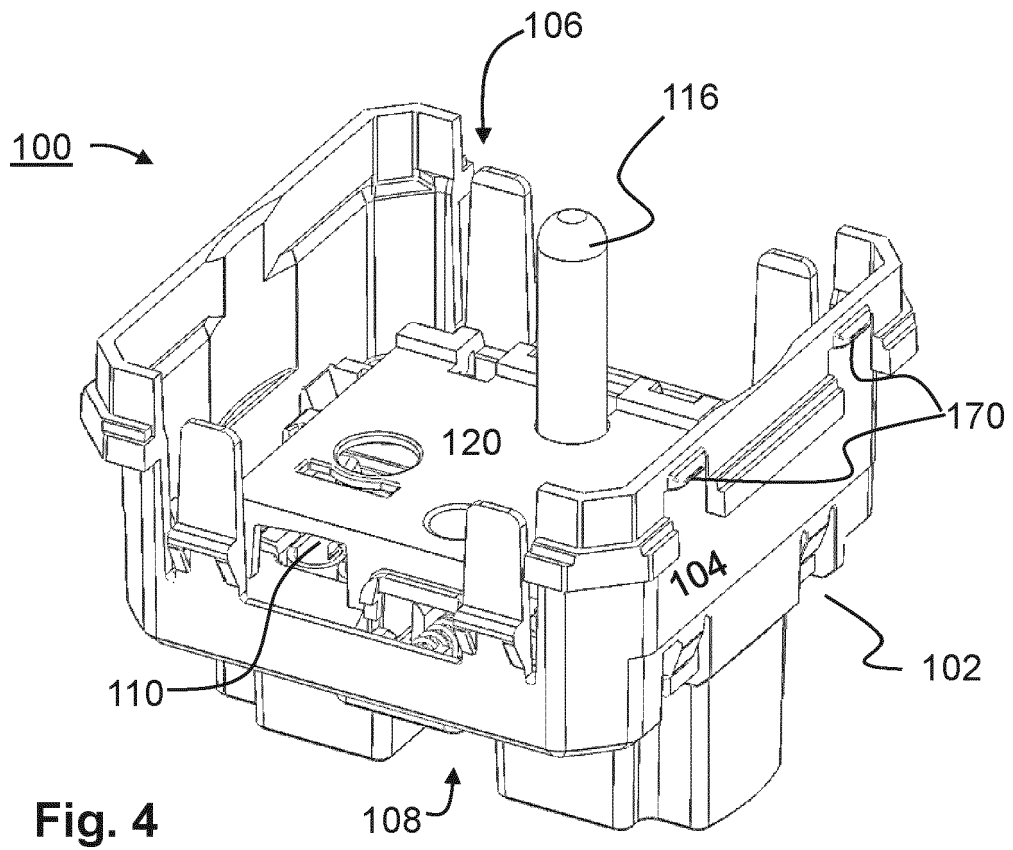
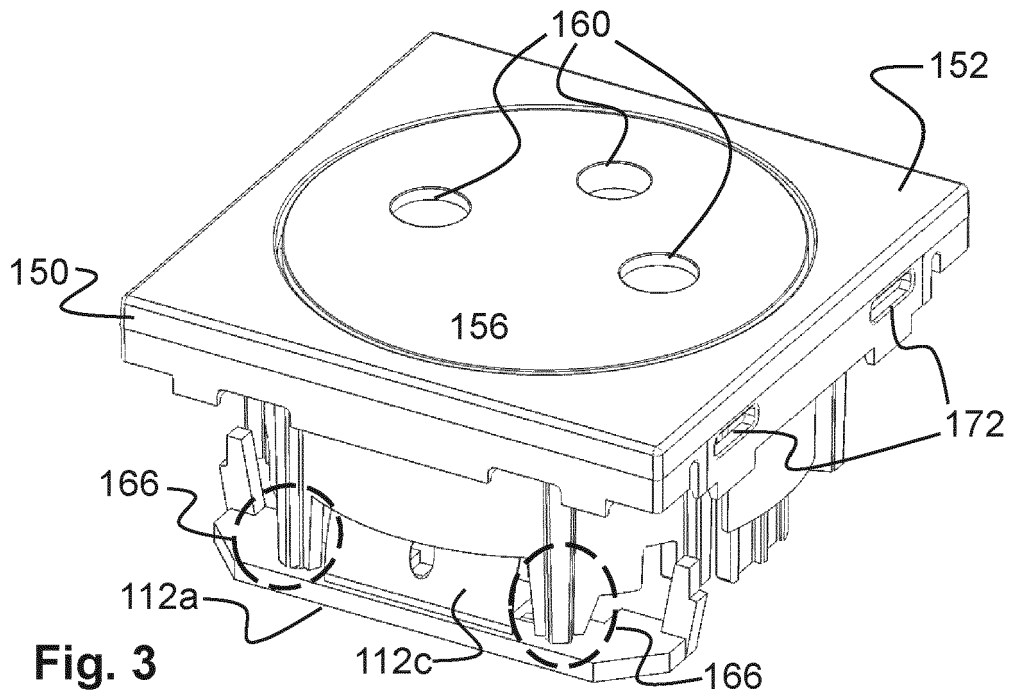


Fig. 2



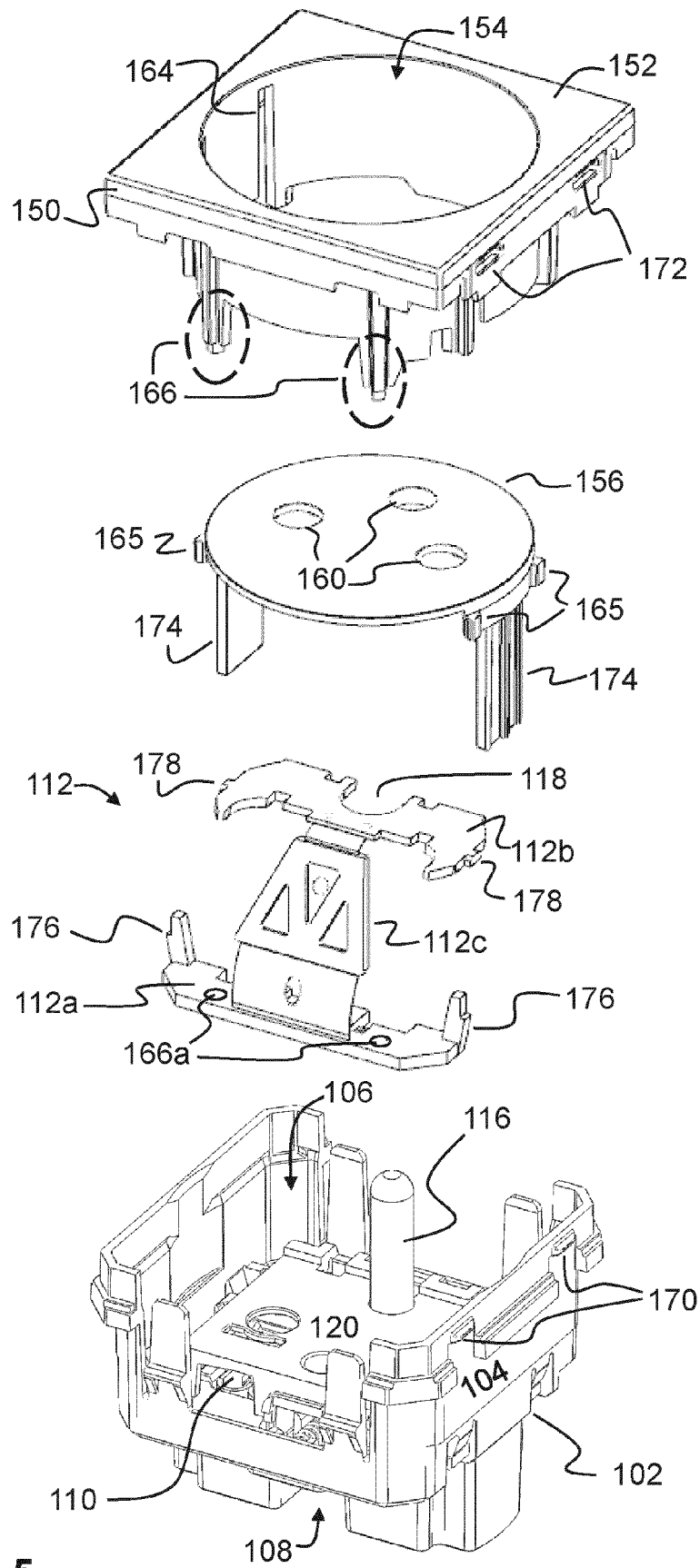


Fig. 5

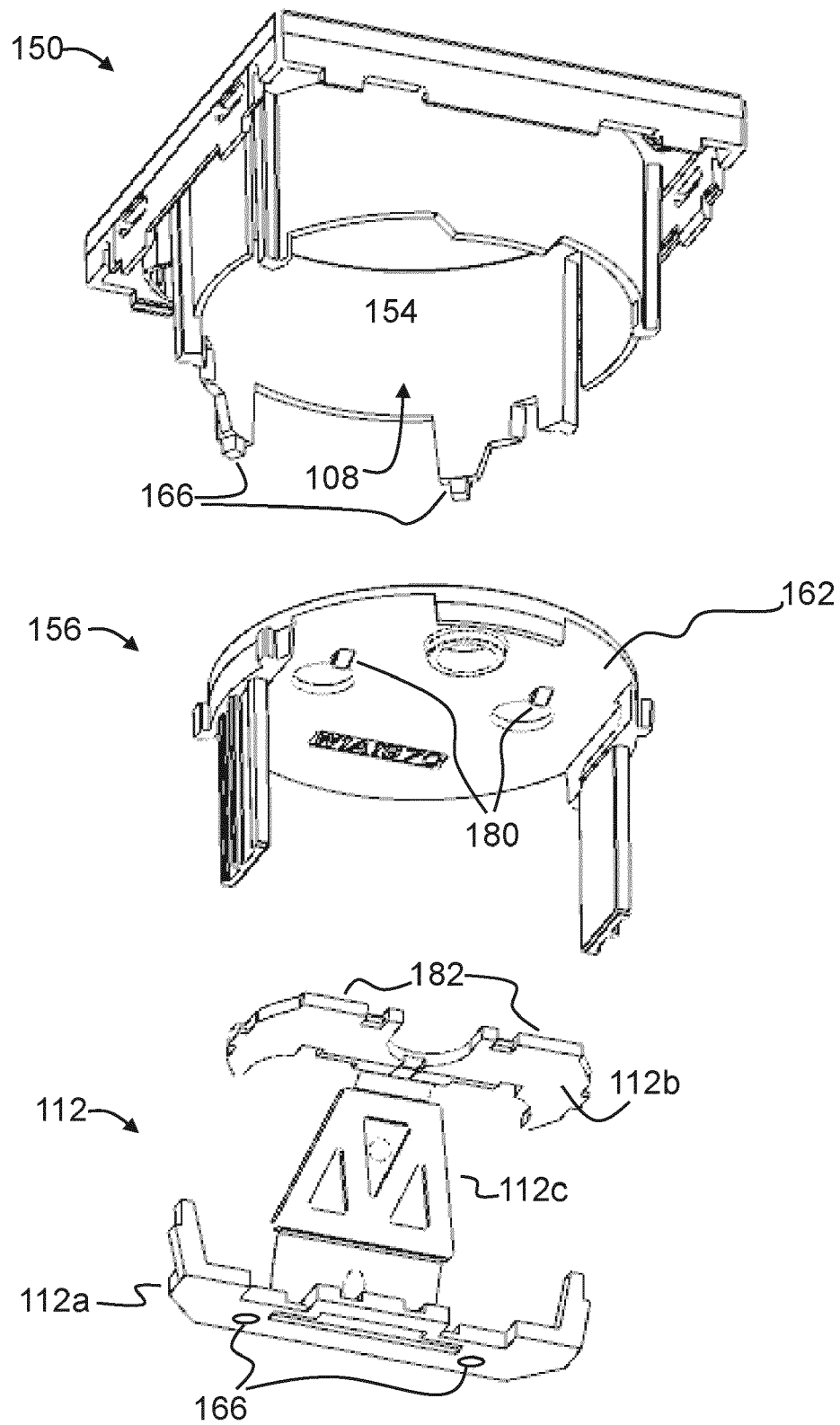


Fig. 6

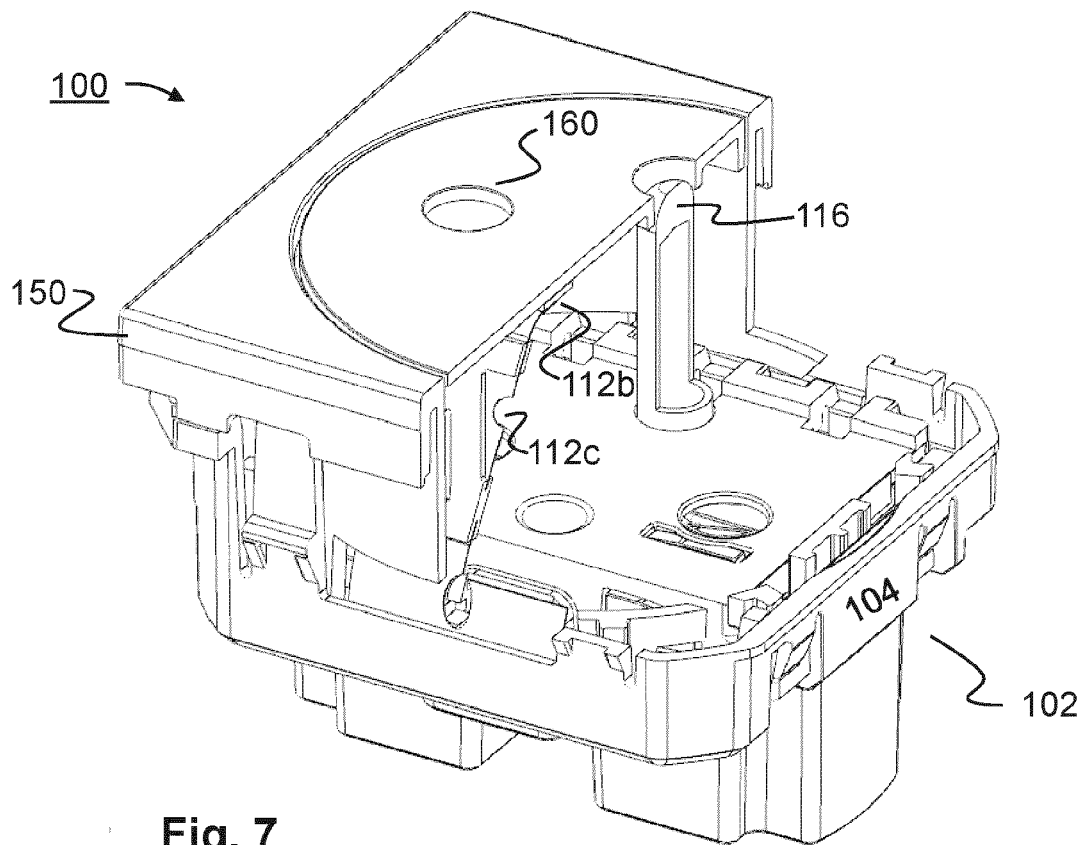


Fig. 7

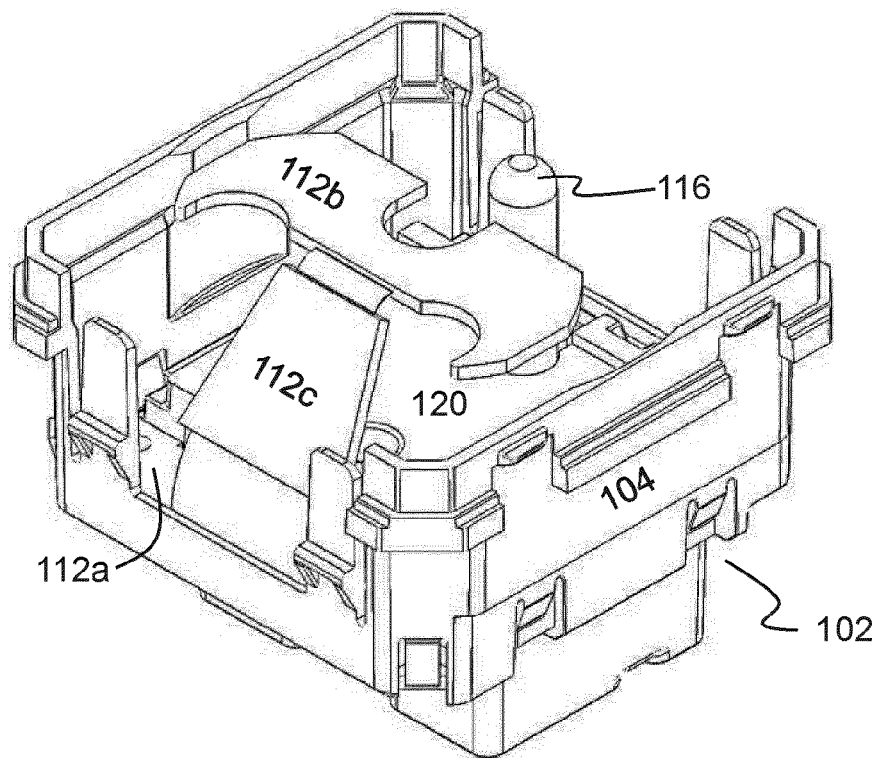


Fig. 8

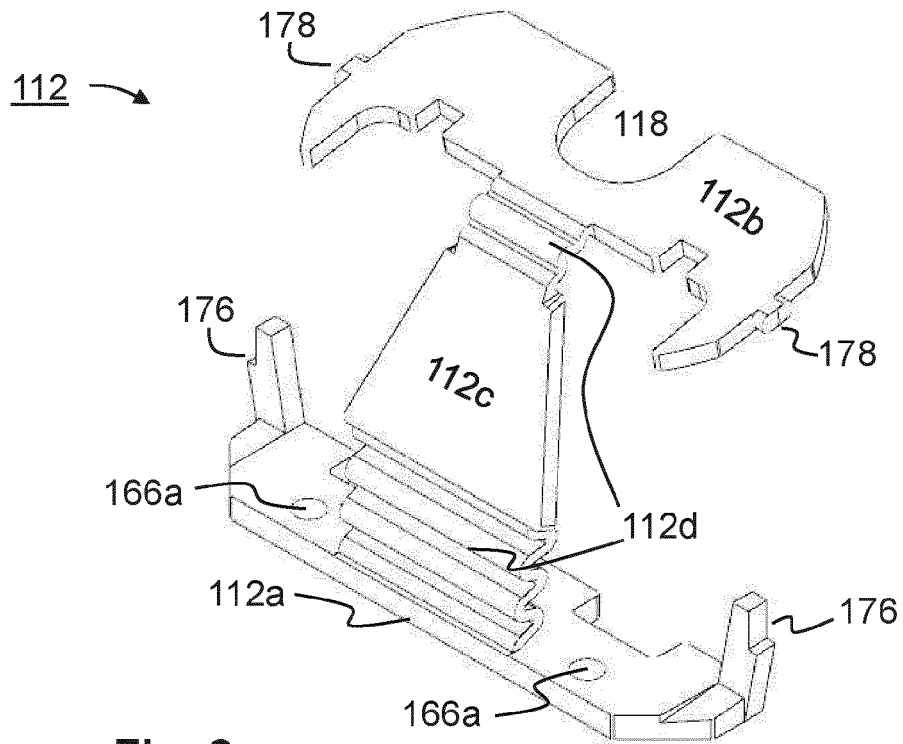


Fig. 9

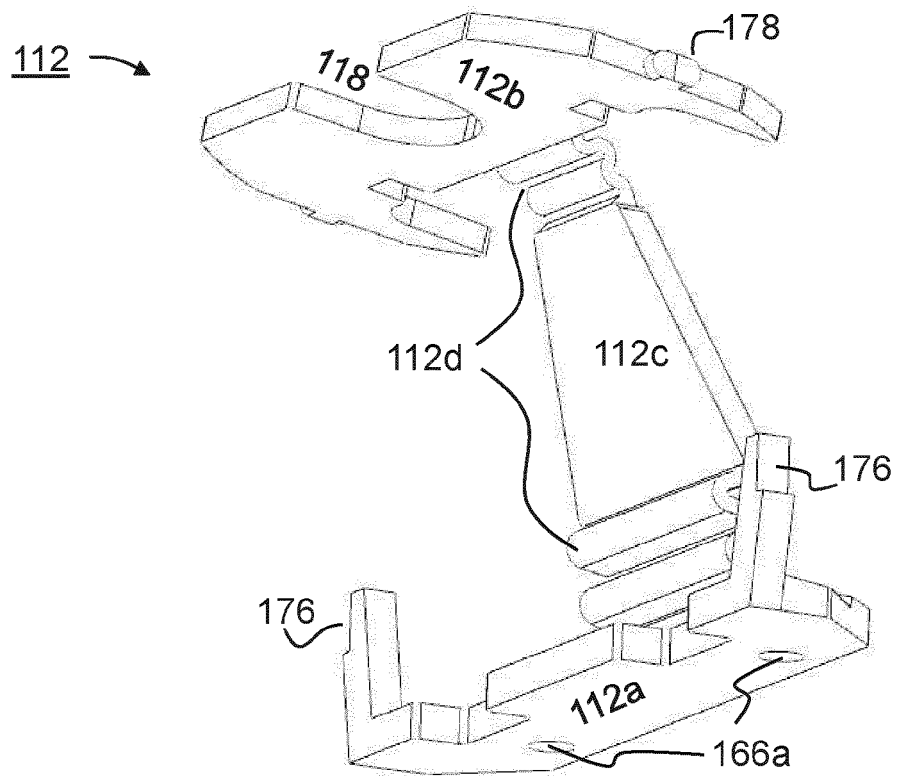


Fig. 10

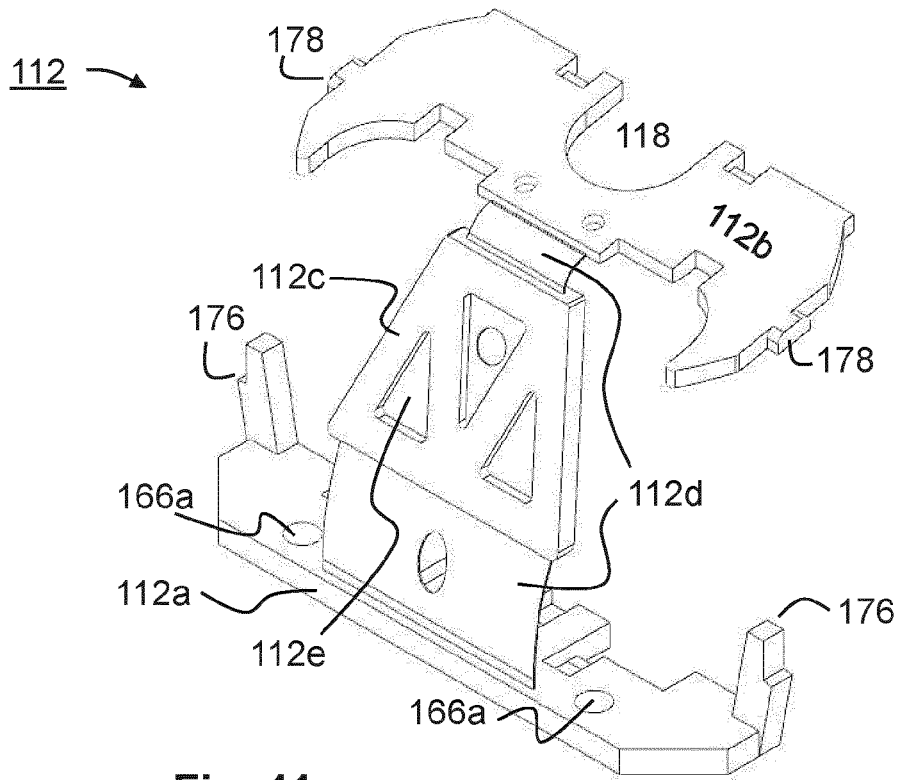


Fig. 11

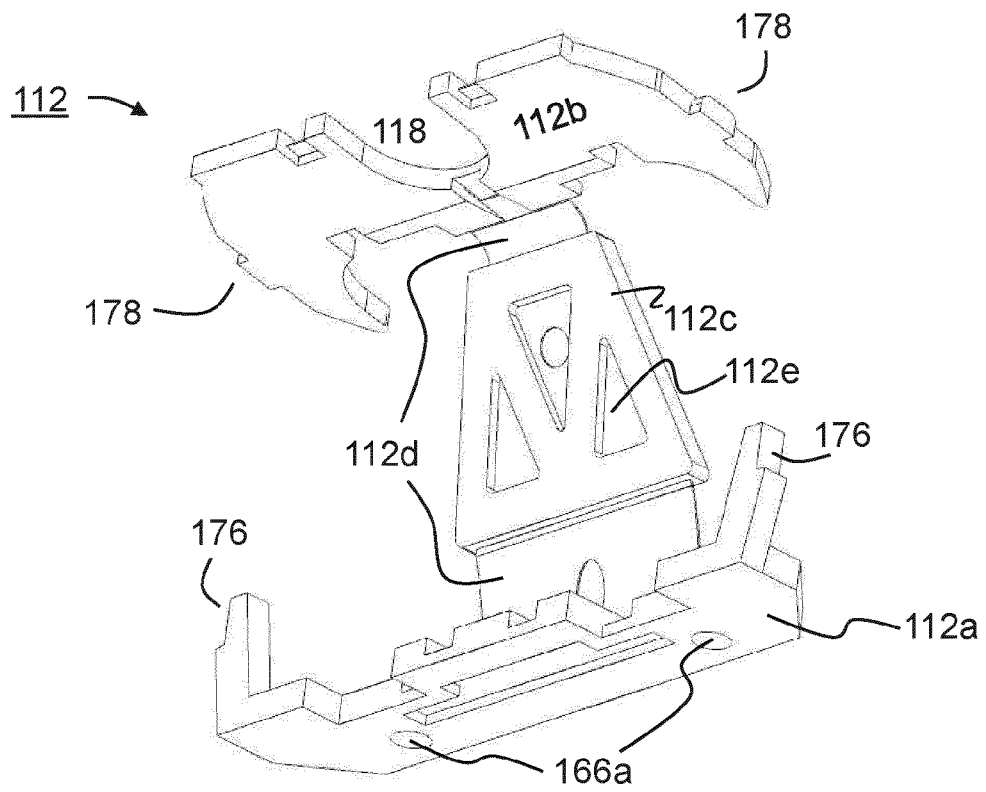


Fig. 12



EUROPEAN SEARCH REPORT

Application Number
EP 20 18 8680

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			H01R
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 4 November 2020	Examiner Mateo Segura, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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