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(54) **FRONT COVER DEVICE FOR POWER SOCKET AND POWER SOCKET EQUIPPED WITH SUCH A FRONT COVER DEVICE**

VORDERE ABDECKUNGSVORRICHTUNG FÜR STECKDOSE UND STECKDOSE MIT EINEM SOLCHEN VORDERABDECKUNGSGERÄT AUSGESTATTET

DISPOSITIF DE COUVERTURE POUR PRISE D'ALIMENTATION ET PRISE D'ALIMENTATION ÉQUIPÉE D'UN TEL DISPOSITIF DE COUVERTURE

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Description

[0001] The invention relates to the field of the power socket intended to be coupled to a plug to connect a power source to electrical appliances and has as its object a front cover device for power socket. It also has as its object a power socket equipped with such a front cover device.

[0002] It is known that a power socket, also known as electrical outlet, is able to be coupled to a plug, generally a round plug, of an electric or electronic appliance to supply power to the latter. A power socket comprises generally an engine, called hereafter a terminal socket, comprising a housing and a connecting terminal mounted in the latter and having terminals, i.e. points of electrical connection, such as female terminals able to be in electrical contact with the pins of the plug.

[0003] Such a power socket comprises usually a front cover having two front access holes forming openings to the connecting terminal which is, in the mounted state of the power socket, connected to a power source. The electrical contact between the female terminals and the pins of the plug, passing through the front access holes, enables the passage of the current to the electrical appliance. However, such a power socket can easily receive, through the front access holes, a thin conductible element held frequently by children who can then receive an electrical shock by the contact of said element with the female terminals or can be electrocuted. In addition, the dusts or other elements can get into the access holes and affect the mechanism of the power socket.

[0004] The document EP 2 555 336 remedies to these drawbacks by disclosing a power socket comprising a terminal socket which comprises a housing receiving a connecting terminal with two electrical terminals, a cover mounted to the front of the housing and having two front access holes forming through-opening for the pins. The cover defining an insertion well and including mounted means on the housing, said cover having sidewall delimiting an insertion cavity extending along a longitudinal axis of engagement for receiving a plug along said longitudinal axis of engagement. The cover further comprises a movable flap, consisting globally in a disc-shaped plate, mounted mobile in translation in the insertion cavity relative to the side wall along the longitudinal axis of engagement and in which movable flap are provided said front access holes for the pins passing through said movable flap. The housing also has a safe system arranged between the connecting terminal and the movable flap. The safe system comprises safe elements moving between a closing position to prevent access of the pins of the plug to the connecting terminal and an opening position for providing access of said pins to the latter.

[0005] The document US 5 466 164 has for its object a connector which can positively prevent any accidental touching of the terminals or entering of extraneous substance. It comprises a plurality of male terminals, a cylindrical hood surrounding the male terminals, a circular

lid plate disposed in the interior of the hood so that said lid plate can move in parallel with the male terminals. The lid plate is provided with terminal-through holes through which the terminal passe freely. In addition, the connector comprises a dust-proofing rubber plate (closure system) which is attached to the rear side of the lid plate for covering the terminal-through holes and which has the same outer peripheral shape of the lid plate. The rubber plate is provided with a plurality of tongue pieces at the positions corresponding to the terminal-through holes. The tongue pieces have many triangular pieces formed by slits extending radially from the center of the hole to the peripheral edge.

[0006] However, in a power socket disclosed in these documents, the dusts can still get into the socket by passing through the front access opening.

[0007] The document US5017153 relates to a membrane for floor outlet fitting. The membrane is dimensioned to be stationary mounted in a well on a shoulder forming an opening or passageway aligned with the opening in the concrete floor. A receptacle is mounted on the shoulder and the membrane has sections forming cavities which fit over the raised sections on the receptacle. The raised sections have blade aperture and grounding pin aperture.

[0008] This invention has as its object to remedy to these drawbacks by proposing a front cover device connectable to a power socket which provides an enhanced protection against dusts or other elements which could pass through the access openings of said movable flap.

[0009] For this purpose, there is provided a device according to claim 1.

[0010] The present invention has also as its subject matter a power socket comprising, on the one hand, a terminal socket, preferably a terminal socket of a standardized power socket, which comprises a housing, a connecting terminal and, eventually, a safe system able to be activated and moved between a closing position preventing access to said connecting terminal and an opening position authorizing said access and, on the other hand, a front cover device, characterized in that the front cover device consists of a front cover device according to the present invention, in that the front cover device is fixed, preferably in a removable manner, to the terminal socket, preferably to the housing of the latter, preferably by a snap-fit or clipping or latching assembly or joint and, when appropriate, in that the safe system is interposed between the connecting terminal and the front access holes for the pins of the plug.

[0011] The present invention will be better understood using the description below, which relates to at least one preferred embodiment, given by way of non-limiting example and explained with reference to the accompanying drawings, in which

- figure 1 shows a perspective view of the front cover device according to the present invention, unassembled, in a preferred embodiment,

- figure 2 shows a perspective view of the cover and the mobile element, unassembled, of the front cover device shown in figure 1,
- figure 3 shows the cover and the mobile element shown in figure 2 with different orientation,
- figure 4 shows a perspective view of the terminal socket of a power socket according to the present invention, assembled,
- figure 5 shows the terminal socket shown in figure 4, unassembled,
- figure 6 shows a perspective view of a power socket according to the present invention, unassembled, with the front cover device shown in figure 2 and the terminal socket shown in figure 5.
- figure 7 shows a perspective view of the power socket shown in figure 6, assembled, when the mobile element is in a front position closing the front opening of engagement,
- figure 8 shows the power socket shown in figure 7 when the mobile element is in a rear position at the bottom of the interior cavity of the cover,
- figure 9 shows the power socket shown in figure 7 in a different orientation, with the front cover device partially represented showing the interior cavity with the elastic means in a preferred embodiment,
- figure 10 (i.e. figures 10a, 10b, 10c, 10d, 10e, 10f) shows the functional engagement of a plug in the power socket shown in figure 7. Figure 10f shows a detail view of figure 10b.

[0012] The figures show a front cover device connectable to a power socket, preferably for a standardized power socket, according to the present invention, said power socket comprising a terminal socket 5, 6, 7, 8, preferably the terminal socket of a standardized power socket. Such a terminal socket comprises a connecting terminal 8. Said front cover device extends along a longitudinal axis and comprises:

- a cover 1 provided to be mounted on said terminal socket and defining an insertion well delimiting an interior cavity 10 having a front opening of engagement 11 for engaging and receiving a plug 3 with pins 30, 31, said cover comprising a front side surrounding said front opening of engagement and a rear side and extending, along the longitudinal axis, between the latter,
- a mobile element 2, such as a plate, having a front face 23 and being mounted movable in translation in the interior cavity 10 along the longitudinal axis, between a front position closing the front opening of engagement 11 and a rear position making it possible the electrical contact between the connecting terminal 8 and the pins 30, said mobile element 2 having at least two front access holes 20 and 21 for the pins 30 and 31 of the plugs 3,
- elastic means 4 able to exert a return force toward the front side of the cover 1, i.e. a return force able

to maintain the mobile element 2 in the front position when the plug 3 is removed from the cover 1 but allowing the insertion of the plug 3 in the socket without excessive effort for the user.

[0013] The mobile element 2 further comprises a closure system 22, each front access hole 20, 21 for the pins 30, 31 being at least substantially closed by the closure system 22 which forms, into each of said front access hole, an elastically deformable closure wall able to be crossed, through elastic deformation, by the pins 30, 31 of the plug 3 and to elastically return toward its original form of closure after the removal of said pins from the front access hole 20, 21 for the pins 30, 31.

[0014] It is understood that the front cover device of the present invention can be applied to a standard mechanism (terminal connecting) of a power socket.

[0015] The interior cavity 10 of the cover 1, when the mobile element 2 is in the rear position, can determine a plug hole shape according to a standardized power socket, for example a power socket known with the registered trademark "Schuko" or other standards of power socket used around the world.

[0016] According to the present invention, each closure wall is incised by at least one incision I, preferably by at least one X-shaped incision so as to be able to be crossed, through elastic deformation, by one of the pins 30, 31 of the plug 3 and to elastically return toward its original form of closure after their removal (figures 1, 2, 3, 6, 7, 8, 9, 10a).

[0017] As it can be seen in the figures 1, 2, 3, 6, 7, 8, 9, 10a and more particularly in figure 3, that closure system 22 comprises a plurality of closure elements 220 and 221, preferably made in an elastic or rubber material, each forming one of the elastically deformable closure walls. Therefore, each closure element 220 and 221 is incised by at least one incision I, preferably by at least one X-shaped incision, so as to be able to be crossed, through elastic deformation, by one of the pins 30 and 31 of the plug 3 and to elastically return toward its original form of closure after the removal of the pins 30 and 31.

[0018] Preferably, each deformable closure wall, when appropriate the or each closure element 220 or 221 mentioned above, can consist of a flexible element such as a film or a membrane or, as it can be seen more particularly in figure 3, a rigid or semi-rigid element, for example in the form of a patch or a pellet.

[0019] As it can be seen in figure 3, preferably, the closure system 22 can comprise at least two closure elements 220 and 221 and holding means 222 and 223 for holding said protection elements respectively within the front access holes 20 and 21 for the pins 30 and 31. Holding means can comprise two locking ring 222 and 223 which may each surround and support respectively one of the closure elements 220 and 221 and may be held within one of the front access holes 20 and 21 for the pins so that closure elements 220 and 221 are held in place in the front access holes 20 and 21 for the pins

30 and 31 by the locking rings 222 and 223. The locking rings 222 and 223 may be held in the front access holes 20 and 21, for example but not limited to, by clicking or snapping or welding. In addition, both locking rings 222 and 223 can be attached together, for example by a connection piece 224. On the other hand, the connection piece 224 and the locking rings 222 and 223 and, eventually, the closure elements 220 and 221, can be made in a single piece, preferably made in a plastic or rubber material.

[0020] Preferably, the mobile element 2 can be a bi-injection part composed of two different plastic or rubber material, one of the plastic or rubber material can form the plate and the other plastic or rubber material can form the closure system, i.e. can form the deformable closure walls, when appropriate can form the or each closure element 220 and 221.

[0021] Each deformable closure wall is formed by one of the closure elements 220 and 221.

[0022] Preferably, each deformable closure walls, or each closure element 220 or 221, is flush or substantially flush or coincides with the front face 23 of the mobile element 2 so as to obtain, in front position of the mobile element 2, a regular visible front surface of the front face 23 of the cover 1 (figures 1, 2, 6, 9, 10).

[0023] Advantageously, each closure element 220 and 221 can have the same color as the mobile element 2, i.e. at least its front face 23, and/or, preferably, the cover 1, i.e. at least the front side of the latter.

[0024] Preferably, in front position of the mobile element 2, the front face 23 of the same can be flush with the front side 26 of the cover 1 so as to obtain, a global regular visible front surface of the front cover device (figures 1, 7, 9, 10a, 10b, 10f, 10c).

[0025] Preferably, the elastic means 4 can consist of a return spring such as an elongate leaf spring, more preferably an elongate leaf spring. Such an elongate leaf spring can be placed obliquely in the interior cavity 10 of the cover 1 with respect to its longitudinal axis (figures 9 and 10). Preferably, such an elongate leaf spring can be made in a single piece, preferably with two opposite bearing or abutment ends 40 and 41. Such an elastic means can easily be mounted or placed in a standardized power socket, for example by simply being adapted to abut or for abutment, for example by its two bearing or abutment ends 40 and 41, against respectively at least one bearing or abutment part or surface 28 of the cover 1, preferably of the mobile element 2, that can be adapted for this effect and at least one bearing or abutment part or surface 52 of the terminal socket 5, 6, 7, 8 that can be a part or surface that already exist in a terminal socket of a standardized power socket or a part or surface specially adapted in a terminal socket (see more particularly figure 9).

[0026] In a preferred embodiment, the mobile element 2 can comprise a peripheral edge 24 and lateral guiding projections 25, preferably two or three lateral guiding projections. In addition, the cover 1 can comprise guiding grooves 12, preferably two or three guiding grooves,

made in the inner wall of the interior cavity 10 and provided to receive the guiding projections to make it possible the translation of the mobile element 2. Each guiding groove 12 can extend parallel to the longitudinal axis of the cover 1 and the lateral guiding projections 25 can extending transversally to the mobile element 2 or the longitudinal axis and beyond the peripheral edge 24 (figures 2, 3, 6, 8 and 9).

[0027] If reference is made, more particularly to figures 2, 3 and 6, it can be seen that the cover 1 can comprise a plurality of rear stops 13, preferably two or three rear stops, preferably located outside the guiding grooves 12, preferably on or near the rear side of the cover 1. For example, each rear stops 13 can be located between two guiding grooves 12. Each rear stop 13 can form an end stop for the mobile element 2 so that the stroke of the latter toward the rear side, or the bottom side, is determined by said rear stops 13.

[0028] The cover 1 can also comprise a plurality of front stop 14, preferably two or three front stops, preferably located back to the front opening of engagement 11. Each front stop 14 can then form a front stop of the mobile element 2 corresponding to the normal position closing the front opening of engagement 11 so that the stroke of the mobile element 2 toward the front side is determined by said front stops (figures 2, 3, 6, and 8).

[0029] Preferably, the mobile element 2 can consist of a disc-shaped plate and the interior cavity 10 of the cover 1 can be a cylindrical cavity. In this case, the diameter of the mobile element 2 can be substantially the same as the internal diameter of the interior cavity 10 (figures 1, 2, 3, 6, 7, 8, 9 and 10).

[0030] The figures, more particularly the figures 4, 5, 6, 7, 8, 9 and 10, also shown a power socket comprising, on the one hand, a terminal socket 5, 6, 7, 8, preferably a terminal socket of a standardized power socket, comprising a housing 5, a connecting terminal 8 and a safe system 6 able to be activated and moved between a closing position preventing access to said connecting terminal and an opening position authorizing said access and, on the other hand, a front cover device. The housing 5 can also be understood as being or forming a base of the power socket.

[0031] Always according to this invention, in such a power socket, the front cover device consists of a front cover device according to the present invention and the front cover device is fixed, preferably in a removable manner, preferably by a snap-fit or clipping or latching assembly or joint 16, 17, 50, 51 to the terminal socket 5, 6, 7, 8, preferably to the housing 5 of the latter. To this end, the front cover device, preferably the cover 1, can comprise at least one opening or female part 16 or 17 and the terminal socket, preferably the housing 5, can comprise at least one male part 50 or 51 for engagement, preferably by snap-fit or clipping or latching, in the at least female part (figures 4, 5, 6, 7, 8). The safe system 6 is interposed between the connecting terminal 8 and the front access holes 20 and 21 for the pins 30 and 31.

[0032] The connecting terminal 8 can comprise a plurality of female terminal(s) 80 and 81 able to receive respectively the pins 30 and 31 of the plug 3 and/or male terminal(s) 82 able to be inserted and connected in a female terminal 33 of the plug 3, for example, as it can be seen in figures 4, 5, 6, 8, 9 and 10, preferably, two female terminals 80 and 81 and one male terminal 82.

[0033] Preferably, such a terminal socket 5, 6, 7, 8 can further comprise a cover element 7 having at least two rear access holes 70 and 71 passing through the latter each facing one of the front access holes 21 and 22 for the pins 30 and 31 of the plug 3 (figures 4, 5, 6, 9 and 10). The safe system 6 can comprise safe elements 60 able to be moved between a closing position closing the rear access holes 70 and 71 (figure 10a, 10b) and an opening position opening the latter. The female terminals 80 or 81 can be located directly opposite to the rear access hole 70 and 71. The opening position can be caused by the movement of the pins 30 and 31 inserted into the rear access holes 70 and 71 and coming into contact with the safe elements 60 before being inserted in the female terminals 80 and 81.

[0034] When the connecting terminal 8 comprises at least one male terminal 82, the mobile element 2 can further comprise at least one front access hole 27 provided to receive the male terminal 82 passing through it (figures 1, 2, 6, 7, 8, 9 and 10). In this case the cover element 7 can further comprise one rear access hole 72 able to receive the male terminal 82 (figures 4, 5, 6, 9 and 10).

[0035] The present invention can provide that the front access hole 27 for the male terminal 82 does not require to be closed by the closure system 22. Indeed, the present invention can provide that, in front position of the mobile element 2, the male terminal 82 is engaged in the corresponding front access hole 27 so as to ensure that the latter is substantially closed by the male terminal 82 passing through the latter (figures 1, 7, 8, 9 and 10).

[0036] The safe system 6 can be provided to be interposed between the connecting terminal 8, more particularly the female terminals 80 and 81, and the rear access holes 70 and 71 facing the front access holes 21 and 22 for the pins 30 and 31 (figures 4, 5, 6).

[0037] The terminal socket 5, 6, 7, 8 can comprise a first bearing or abutment part or surface 52 and the mobile element 2 can comprise a second bearing or abutment part or surface 28. The elastic means 4, more particularly when the latter consist of an elongate leaf spring, can have two opposed bearing or abutment ends 40 and 41 coming into bearing or abutment contact respectively against the first and second bearing or abutment parts or surfaces 52 and 28 (figure 9). The second bearing or abutment part or surface 28 can consist of an inner part of the mobile element 2, for example at least one stop made in, or attached to, the inner face, opposite to the front face 23, of the mobile element 2 (figures 7, 8, 9, 10). The first bearing or abutment part or surface 52 can consist of a part or surface of the housing 5, preferably

of the housing 5 of the terminal socket of a standardized power socket, for example an inner corner or an inner wall, of the housing (figures 7, 8, 9, 10), able to maintain the position of the elongate leaf spring in the operative or non-operative state of the latter.

[0038] Therefore, in an example of operating mode of the present invention, it can be seen in figure 10 that:

- when the plug 3 is inserted in the interior cavity 10 of the cover 1 by the front opening of engagement 11 of the cover 1 of the front cover device equipping the power socket, the pins 30 or 31 of said plug 3 pass through the corresponding front access holes 20 and 21 (figures 10b, 10f), which has the effect of elastically deforming each closure element 220 and 221 extending into or cover the latter,
- the plug 3 can freely go down or toward the bottom of the power socket till it touch, by means of its front side from which extends perpendicularly the pins 30 and 31, the front face 23 of the mobile element 2 and the safe system 6 (about the same moment), which has the effect to open the safe system 6 (figure 10c),
- after opening safe system 6, the plug 3 can go further and insert the pins 30 and 31 in the female terminals 80 and 81 making it possible the electrical contact between the connecting terminal 8 and said pins 30 and 31, the elastic means 4 are compressed (figure 10d),
- when the plug 3 moves toward the connecting terminal 8 in the interior cavity 10 of the cover 1, the mobile element 2 moves together with the plug 3 in the same direction along the longitudinal axis of the front cover device (figures 10d, 10e).

[0039] When the plug 3 is removed from the interior cavity 10 of the cover 1 and the pins 30 and 31 are removed from the corresponding front access holes 20 and 21, the elastic means 4, which are compressed or resiliently deformed, exert a return force toward the front side of the cover 1 having for effect to maintain the mobile element 2 in the front position closing the interior cavity 10.

[0040] The present invention offers then several advantages such as:

- protection against the introduction of the dusts thanks to the closure system 22,
- the front cover device according to the invention is especially well-suited to be mounted on standardized terminal sockets,
- to give an esthetic effect when the or each deformable closure walls is flush or substantially flush or coincides with the front face 23 of the mobile element 2.

Claims

1. Front cover device connectable to a power socket, said power socket comprising a terminal socket (5, 6, 7, 8), said terminal socket comprising a connecting terminal (8), said front cover device extending along a longitudinal axis and comprising :

- a cover (1) provided to be mounted on said terminal socket and defining an insertion well delimiting an interior cavity (10) having a front opening of engagement (11) suitable for engaging and receiving a plug (3) with pins (30, 31), said cover comprising a front side surrounding said front opening of engagement and a rear side and extending, along the longitudinal axis, between the latter,

- a mobile element (2), such as a plate, having a front face (23) and being mounted movable in translation in the interior cavity (10) along the longitudinal axis, between a front position closing the front opening of engagement (11) and a rear position making it possible the electrical contact between the connecting terminal(8) and the pins (30), said mobile element (2) having at least two front access holes (20, 21) for the pins (30, 31),

- elastic means (4) able to exert a return force toward the front side of the cover (1),

the mobile element (2) further comprises a closure system (22), each front access hole (20, 21) for the pins (30, 31) being at least substantially closed by the closure system (22) which forms, into each of said front access hole, an elastically deformable closure wall able to be crossed, through elastic deformation, by the pins (30, 31) of the plug (3) and to elastically return toward its original form of closure after their removal, each closure wall being incised by at least one incision (I), preferably by at least one X-shaped incision,

characterized in that the closure system (22) comprises a plurality of closure elements (220, 221), preferably made in an elastic or rubber material, each forming one of the elastically deformable closure walls and **in that** each deformable closure walls is flush or substantially flush or coincides with the front face (23) of the mobile element so as to obtain, in front position of the mobile element (2), a regular visible front surface of the front face (23) of the cover (1).

2. Front cover device, according to claim 1, **characterized in that** the mobile element (2) consist of a disc-shaped plate and **in that** the interior cavity (10) of the cover is a cylindrical cavity.
3. Front cover device, according to claim 2, **character-**

ized in that the interior cavity (10), when the mobile element (2) is in the rear position, determine a plug hole shape according to a standardized power socket.

4. Front cover device, according to anyone of claims 1 to 3, **characterized in that** each deformable closure walls consists of a flexible element, such as a film or a membrane or a rigid or semi-rigid element, for example in the form of a patch or a pellet.

5. Front cover device, according to anyone of claims 1 to 4, **characterized in that** the mobile element (2) is a bi-injection part composed of two different plastic or rubber material, one of the plastic or rubber material forming the plate and the other plastic or rubber material forming the closure system (22).

6. Front cover device, according to anyone of claims 1 or 5, **characterized in that** the elastic means (4) consist of a return spring such as an elongate leaf spring, more preferably an elongate leaf spring having a single leaf.

7. Front cover device, according to claim 6, **characterized in that** the return spring is an elongate leaf spring placed obliquely in the interior cavity (10) of the cover (1) with respect to its longitudinal axis.

8. Front cover device, according to anyone of claim 1 to 7, **characterized in that** the mobile element (2) comprises a peripheral edge (24) and two or three lateral guiding projections (25) and the cover (1) comprises two or three guiding grooves (12) made in the inner wall of the interior cavity (10) and provided to receive the guiding projections to make it possible the translation of the mobile element (2), each guiding groove (12) extending, parallel to the longitudinal axis, the lateral guiding projections (25) extending transversally to the mobile element (2) or the longitudinal axis of the cover (1) and beyond the peripheral edge (24).

9. Front cover device, according to claim 8, **characterized in that** the cover (1) comprises a plurality of rear stops (13), preferably two or three rear stops, located outside the guiding grooves (12) on or near the bottom side, each rear stop (13) forming an end stop for the mobile element (2) so that the stroke of the latter toward the bottom side is determined by said rear stops.

10. Power socket comprising, on the one hand, a terminal socket (5, 6, 7, 8), which comprises a housing (5), a connecting terminal (8) and, eventually, a safe system (6) able to be activated and moved between a closing position preventing access to said connecting terminal and an opening position authorizing said

access and, on the other hand, a front cover device, **characterized in that** the front cover device consists of a front cover device according to anyone of claims 1 to 9, **in that** the front cover device is fixed, preferably in a removable manner, to the terminal socket (5, 6, 7, 8) and, when appropriate, **in that** the safe system (6) is interposed between the connecting terminal (8) and the front access holes (20, 21) for the pins (30, 31) of the plug (3).

11. Power socket, according to claim 10, **characterized in that** the terminal socket (5, 6, 7, 8) further comprises a cover element (7) having at least two rear access holes (70, 71) passing through the latter each facing one of the front access holes (21, 22) for the pins (30, 31) and **in that** the safe system (6) is interposed between the connecting terminal (8) and the rear access holes (70, 71) and comprises safe elements (60) able to be moved between a closing position closing the rear access holes (70, 71) and an opening position opening the latter.

12. Power socket, according to anyone of claims 10 to 11, **characterized in that** the terminal socket (5, 6, 7, 8, 9) comprises a first bearing or abutment part or surface (52) and the mobile element (2) comprises a second abutment or bearing part or surface (28) and **in that** the elastic means (4), more particularly when the latter consist of an elongate leaf spring (4) according to claims 6 to 7 has two opposed bearing or abutment ends (40, 41), coming into bearing or abutment contact respectively against the first and second bearing or abutment part or surfaces (28, 52).

Patentansprüche

1. Frontabdeckungsvorrichtung, die mit einer Steckdose verbindbar ist, wobei die Steckdose eine Klemmbuchse (5, 6, 7, 8) umfasst, wobei die Klemmbuchse eine Anschlussklemme (8) umfasst, wobei sich die Frontabdeckungsvorrichtung entlang einer Längsachse erstreckt und Folgendes umfasst:

- eine Abdeckung (1), die dazu vorgesehen ist, an der Klemmbuchse montiert zu sein und eine Einsetzbohrung definiert, die einen Hohlraum (10) begrenzt, der eine Fronteingriffsöffnung (11) aufweist, die zum Eingreifen und Aufnehmen (3) eines Steckers mit Kontakten (30, 31) geeignet ist, wobei die Abdeckung eine Frontseite, die die Fronteingriffsöffnung umgibt, und eine Rückseite umfasst und sich zwischen den letzteren entlang der Längsachse erstreckt,
- ein Mobilelement (2), zum Beispiel eine Platte, die eine Frontseite (23) aufweist und entlang der Längsachse verschiebbar, zwischen einer

Frontstellung, die die Fronteingriffsöffnung (11) schließt, und einer Rückseitenstellung, die den elektrischen Kontakt zwischen der Anschlussklemme (8) und den Kontakten (30) ermöglicht, im Hohlraum (10) montiert ist, wobei das Mobilelement (2) mindestens zwei Frontzugriffslöcher (20, 21) für die Kontakte (30, 31) aufweist, - Elastikeinrichtungen (4), die eine Rückholkraft zur Frontseite der Abdeckung (1) ausüben können,

wobei das Mobilelement (2) ferner ein Verschlusssystem (22) umfasst, wobei jedes Frontzugriffsloch (20, 21) für die Kontakte (30, 31) vom Verschlusssystem (22), das in jedes der Frontzugriffslöcher eine elastisch verformbare Verschlusswand ausbildet, die durch elastische Verformung von den Kontakten (30, 31) des Steckers (3) gekreuzt werden können und nach dem Entfernen elastisch in ihre ursprüngliche Verschlussform zurückkehren können, zumindest im Wesentlichen verschlossen wird, wobei jede Verschlusswand von mindestens einem Einschnitt (I), vorzugsweise von mindestens einem X-förmigen Einschnitt, eingeschnitten ist,

dadurch gekennzeichnet, dass das Verschlusssystem (22) mehrere Verschlusselemente (220, 221) umfasst, die vorzugsweise aus einem elastischen oder Kautschukmaterial bestehen, wobei jede eine der elastisch verformbaren Verschlusswände ausbildet, und dadurch, dass jede der elastisch verformbaren Verschlusswände mit der Frontseite (23) des Mobilelements bündig oder im Wesentlichen bündig ist, um in der Frontstellung des Mobilelements (2) eine normal sichtbare Frontfläche der Frontseite (23) der Abdeckung (1) zu erhalten.

2. Frontabdeckungsvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Mobilelement (2) aus einer scheibenförmigen Platte besteht und dass der Hohlraum (10) der Abdeckung ein zylindrischer Hohlraum ist.

3. Frontabdeckungsvorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** der Hohlraum (10) eine Steckerlochform entsprechend einer standardisierten Steckdose definiert, wenn sich das Mobilelement (2) in der hinteren Stellung befindet.

4. Frontabdeckungsvorrichtung nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** jede verformbare Verschlusswand aus einem flexiblen Element, zum Beispiel einer Folie oder Membran, oder einem steifen oder halbsteifen Element, zum Beispiel in Form eines Einsatzes oder Pellets besteht.

5. Frontabdeckungsvorrichtung nach einem der Ansprüche 1 bis 4,

- dadurch gekennzeichnet, dass** das Mobilelement (2) ein Zweikomponenten-Spritzgießteil ist, das aus zwei verschiedenen Kunststoff- oder Kautschukmaterialien besteht, wobei ein Kunststoff- oder Kautschukmaterial die Platte ausbildet und das andere Kunststoff- oder Kautschukmaterial das Verschlusssystem (22) ausbildet.
6. Frontabdeckungsvorrichtung nach einem der Ansprüche 1 oder 5, **dadurch gekennzeichnet, dass** die Elastikeinrichtung (4) aus einer Rückholfeder, zum Beispiel einer länglichen Blattfeder, weiter bevorzugt einer länglichen Blattfeder mit einem einzelnen Blatt, besteht.
7. Frontabdeckungsvorrichtung nach Anspruch 6, **dadurch gekennzeichnet, dass** die Rückholfeder eine längliche Blattfeder ist, die in Bezug zu ihrer Längsachse schräg im Hohlraum (10) der Abdeckung (1) angeordnet ist.
8. Frontabdeckungsvorrichtung nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** das Mobilelement (2) eine Umfangskante (24) und zwei oder drei Führungsvorsprünge (25) umfasst und die Abdeckung (1) zwei oder drei Führungsnuten (12) umfasst, die in der Innenwand des Hohlraums (10) ausgebildet sind und dazu vorgesehen sind, die Führungsvorsprünge aufzunehmen, um die Verschiebung des Mobilelements (2) zu ermöglichen, wobei sich jede Führungsnut (12) parallel zur Längsachse erstreckt, wobei sich die lateralen Führungsvorsprünge (25) quer zum Mobilelement (2) oder zur Längsachse der Abdeckung (1) und über die Umfangskante (24) hinaus erstrecken.
9. Frontabdeckungsvorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** die Abdeckung (1) mehrere hintere Anschläge (13), vorzugsweise zwei oder drei hintere Anschläge, umfasst, die sich außerhalb der Führungsnuten (12) an oder in der Nähe der Unterseite befinden, wobei jeder hintere Anschlag (13) einen Endanschlag für das Mobilelement (2) ausbildet, sodass dessen Zug zur Unterseite durch die hinteren Anschläge bestimmt wird.
10. Steckdose, die einerseits eine Klemmbuchse (5, 6, 7, 8), die ein Gehäuse (5) umfasst, eine Anschlussklemme (8) und schließlich ein Schutzsystem (6), das aktiviert und zwischen einer geschlossenen Stellung, die den Zugang zur Anschlussklemme verhindert, und einer geöffneten Stellung, die den Zugang zulässt, bewegt werden kann, und andererseits eine Frontabdeckungsvorrichtung umfasst, **dadurch gekennzeichnet, dass** die Frontabdeckungsvorrichtung aus einer Frontabdeckungsvorrichtung nach einem der Ansprüche 1 bis 9 besteht, dadurch, dass die Frontabdeckungsvorrichtung gegebenenfalls, vorzugsweise auf lösbare Weise, an der Klemmbuchse (5, 6, 7, 8) fixiert ist, dadurch, dass das Schutzsystem (6) zwischen der Anschlussklemme (8) und den Frontzugangslöchern (20, 21) für die Kontakte (30, 31) des Steckers (3) angeordnet ist.
11. Steckdose nach Anspruch 10, **dadurch gekennzeichnet, dass** die Klemmbuchse (5, 6, 7, 8) ferner ein Abdeckungselement (7) umfasst, das mindestens zwei hintere Zugangslöcher (70, 71) aufweist, die durch dieses verlaufen und jeweils einem der Frontzugangslöcher (21, 22) für die Kontakte (30, 31) zugewandt sind, und dadurch, dass das Schutzsystem (6) zwischen der Anschlussklemme (8) und den hinteren Zugangslöchern (70, 71) angeordnet ist und Schutzelemente (60) umfasst, die zwischen einer geschlossenen Stellung, die die hinteren Zugangslöcher (70, 71) verschließt, und einer Öffnungsstellung, die diese öffnet, beweglich ist.
12. Steckdose nach einem der Ansprüche 10 bis 11, **dadurch gekennzeichnet, dass** die Klemmbuchse (5, 6, 7, 8, 9) ein/e erste/s Lager- oder Anschlagteil oder -fläche (52) umfasst und das Mobilelement (2) ein/e zweite/s Lager- oder Anschlagteil oder -fläche (28) umfasst und dadurch, dass die Elastikeinrichtung (4) insbesondere, wenn sie aus einer länglichen Blattfeder (4) nach Anspruch 6 bis 7 besteht, zwei entgegengesetzte Lager- oder Anschlagenden (40, 41) aufweist, die gegen das/die erste bzw. zweite Lager- oder Anschlagteil oder -fläche (28, 52) in Lager- oder Anschlagkontakt kommen.
- ### Revendications
1. Dispositif de couverture avant pouvant être relié à une prise de courant, ladite prise de courant comprenant un socle à bornes (5, 6, 7, 8), ledit socle à bornes comprenant une borne de connexion (8), ledit dispositif de couverture avant s'étendant le long d'un axe longitudinal et comprenant :
- un couvercle (1) prévu pour être monté sur ledit socle à bornes et définissant un puits d'insertion délimitant une cavité intérieure (10) présentant une ouverture avant d'engagement (11) apte à coopérer avec et à recevoir une fiche (3) avec des broches (30, 31), ledit couvercle comprenant une face avant entourant ladite ouverture avant d'engagement et une face arrière, et s'étendant, suivant l'axe longitudinal, entre ces dernières,
 - un élément mobile (2), tel qu'une plaque, présentant une face avant (23) et monté mobile en translation dans la cavité intérieure (10) suivant l'axe longitudinal, entre une position avant fermant l'ouverture avant d'engagement (11) et

une position arrière permettant le contact électrique entre la borne de connexion (8) et les broches (30), ledit élément mobile (2) présentant au moins deux trous d'accès avant (20, 21) pour les broches (30, 31),
- un moyen élastique (4) apte à exercer une force de rappel vers la face avant du couvercle (1),

l'élément mobile (2) comprenant en outre un système de fermeture (22), chaque trou d'accès avant (20, 21) pour les broches (30, 31) étant au moins sensiblement fermé par le système de fermeture (22) qui forme, dans chacun desdits trous d'accès avant, une paroi de fermeture élastiquement déformable pouvant être traversée, par déformation élastique, par les broches (30, 31) de la fiche (3) et pouvant revenir élastiquement à sa forme de fermeture d'origine après leur retrait, chaque paroi de fermeture étant incisée par au moins une incision (I), de préférence par au moins une incision en forme de X, **caractérisé en ce que** le système de fermeture (22) comprend une pluralité d'éléments de fermeture (220, 221), de préférence réalisés dans un matériau élastique ou caoutchouteux, chacun formant une des parois de fermeture élastiquement déformables et **en ce que** chaque paroi de fermeture déformable est à fleur ou sensiblement à fleur ou coïncide avec la face avant (23) de l'élément mobile de manière à obtenir, dans la position avant de l'élément mobile (2), une surface avant visible régulière de la face avant (23) du couvercle (1).

2. Dispositif de couverture avant selon la revendication 1, **caractérisé en ce que** l'élément mobile (2) est constitué d'une plaque en forme de disque et **en ce que** la cavité intérieure (10) du couvercle est une cavité cylindrique.
3. Dispositif de couverture avant selon la revendication 2, **caractérisé en ce que** la cavité intérieure (10), lorsque l'élément mobile (2) est dans la position arrière, détermine une forme de trou de fiche conforme à une prise de courant normalisée.
4. Dispositif de couverture avant selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** chaque paroi de fermeture déformable est constituée d'un élément flexible, tel qu'un film ou une membrane, ou d'un élément rigide ou semi-rigide, par exemple sous la forme d'une pièce ou d'une pastille.
5. Dispositif de couverture avant selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** l'élément mobile (2) est une pièce bi-injectée composée de deux matières plastiques ou caoutchouteuses différentes, l'une des matières plastiques ou caoutchouteuses formant la plaque et l'autre matière plastique ou caoutchouteuse formant le système de

fermeture (22).

- 5 6. Dispositif de couverture avant selon l'une quelconque des revendications 1 ou 5, **caractérisé en ce que** le moyen élastique (4) est constitué d'un ressort de rappel tel qu'un ressort à lame allongée, de préférence un ressort à lame allongée à une seule lame.
- 10 7. Dispositif de couverture avant selon la revendication 6, **caractérisé en ce que** le ressort de rappel est un ressort à lame allongée placé obliquement dans la cavité intérieure (10) du couvercle (1) par rapport à son axe longitudinal.
- 15 8. Dispositif de couverture avant selon l'une quelconque des revendications 1 à 7, **caractérisé en ce que** l'élément mobile (2) comprend un bord périphérique (24) et deux ou trois saillies de guidage latérales (25) et le couvercle (1) comprend deux ou trois rainures de guidage (12) réalisées dans la paroi intérieure de la cavité intérieure (10) et prévues pour recevoir les saillies de guidage pour permettre la translation de l'élément mobile (2), chaque rainure de guidage (12) s'étendant parallèlement à l'axe longitudinal, les saillies de guidage latérales (25) s'étendant transversalement à l'élément mobile (2) ou à l'axe longitudinal du couvercle (1) et au-delà du bord périphérique (24).
- 20 9. Dispositif de couverture avant selon la revendication 8, **caractérisé en ce que** le couvercle (1) comprend une pluralité de butées arrière (13), de préférence deux ou trois butées arrière, situées à l'extérieur des rainures de guidage (12) sur ou près du côté inférieur, chaque butée arrière (13) formant une butée de fin de course pour l'élément mobile (2), de sorte que la course de ce dernier vers le côté inférieur est déterminée par lesdites butées arrière.
- 25 10. Prise de courant comprenant, d'une part, un socle à bornes (5, 6, 7, 8) qui comprend un boîtier (5), une borne de connexion (8) et, éventuellement, un système de sécurité (6) pouvant être activé et déplacé entre une position de fermeture empêchant l'accès à ladite borne de connexion et une position d'ouverture autorisant ledit accès et, d'autre part, un dispositif de couverture avant, **caractérisé en ce que** le dispositif de couverture avant est constitué d'un dispositif de couverture avant selon l'une quelconque des revendications 1 à 9, **en ce que** le dispositif de couverture avant est fixé, de préférence de manière amovible, au socle à bornes (5, 6, 7, 8) et, le cas échéant, **en ce que** le système de sécurité (6) est interposé entre la borne de connexion (8) et les trous d'accès avant (20, 21) pour les broches (30, 31) de la fiche (3).
- 30 11. Prise de courant selon la revendication 10, **carac-**
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caractérisée en ce que le socle à bornes (5, 6, 7, 8) comprend en outre un élément de couvercle (7) présentant au moins deux trous d'accès arrière (70, 71) traversant ce dernier, chacun faisant face à l'un des trous d'accès avant (21, 22) pour les broches (30, 31) et **en ce que** le système de sécurité (6) est interposé entre la borne de connexion (8) et les trous d'accès arrière (70, 71) et comprend des éléments de sécurité (60) pouvant être déplacés entre une position de fermeture fermant les trous d'accès arrière (70, 71) et une position d'ouverture ouvrant ces derniers.

12. Prise de courant selon l'une quelconque des revendications 10 à 11, **caractérisée en ce que** le socle à bornes (5, 6, 7, 8, 9) comprend une première partie ou surface d'appui ou de butée (52) et l'élément mobile (2) comprend une deuxième partie ou surface d'appui ou de butée (28) et **en ce que** le moyen élastique (4), plus particulièrement lorsque ce dernier est constitué d'un ressort à lame allongé (4) selon les revendications 6 à 7 qui présente deux extrémités d'appui ou de butée opposées (40, 41), vient en contact d'appui ou de butée respectivement contre la première et la deuxième partie ou surface d'appui ou de butée (28, 52).

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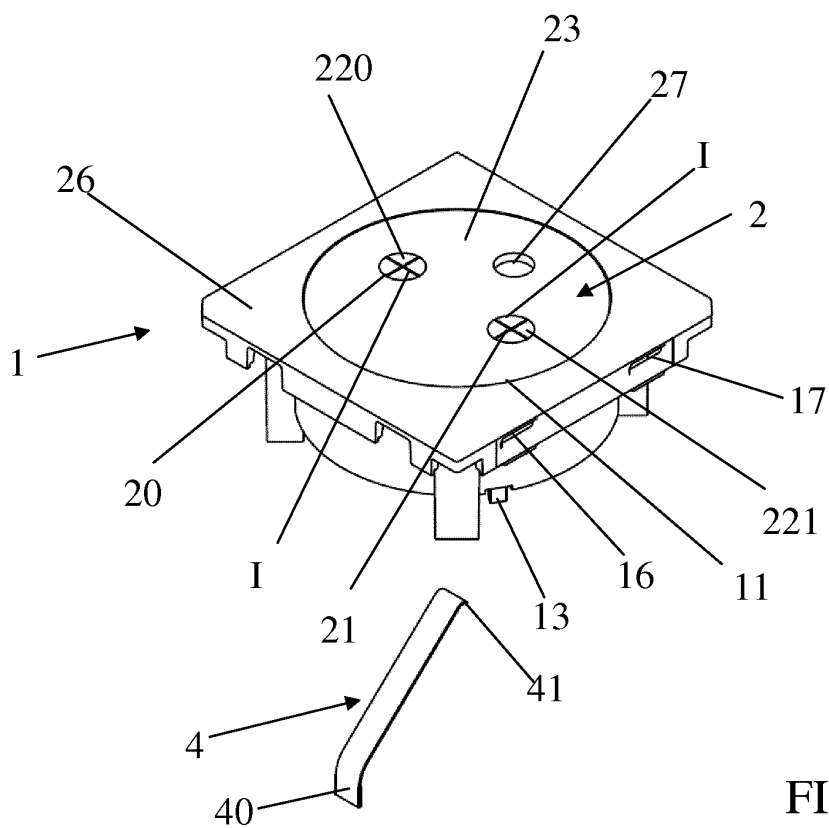


FIG. 1

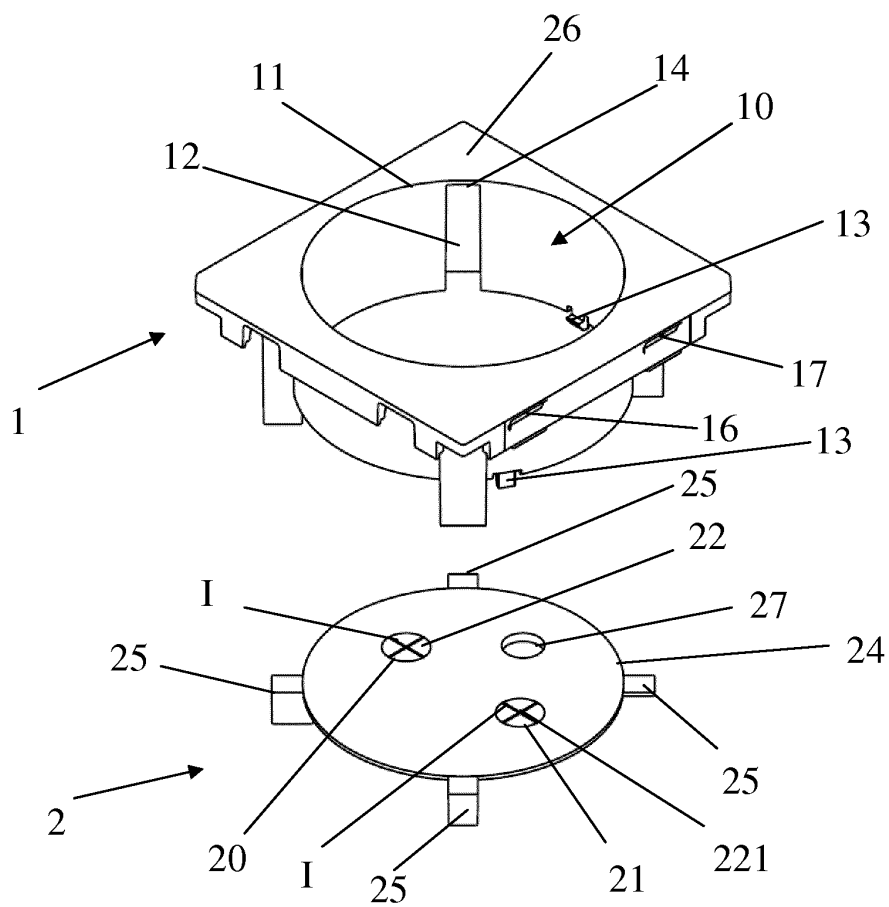


FIG. 2

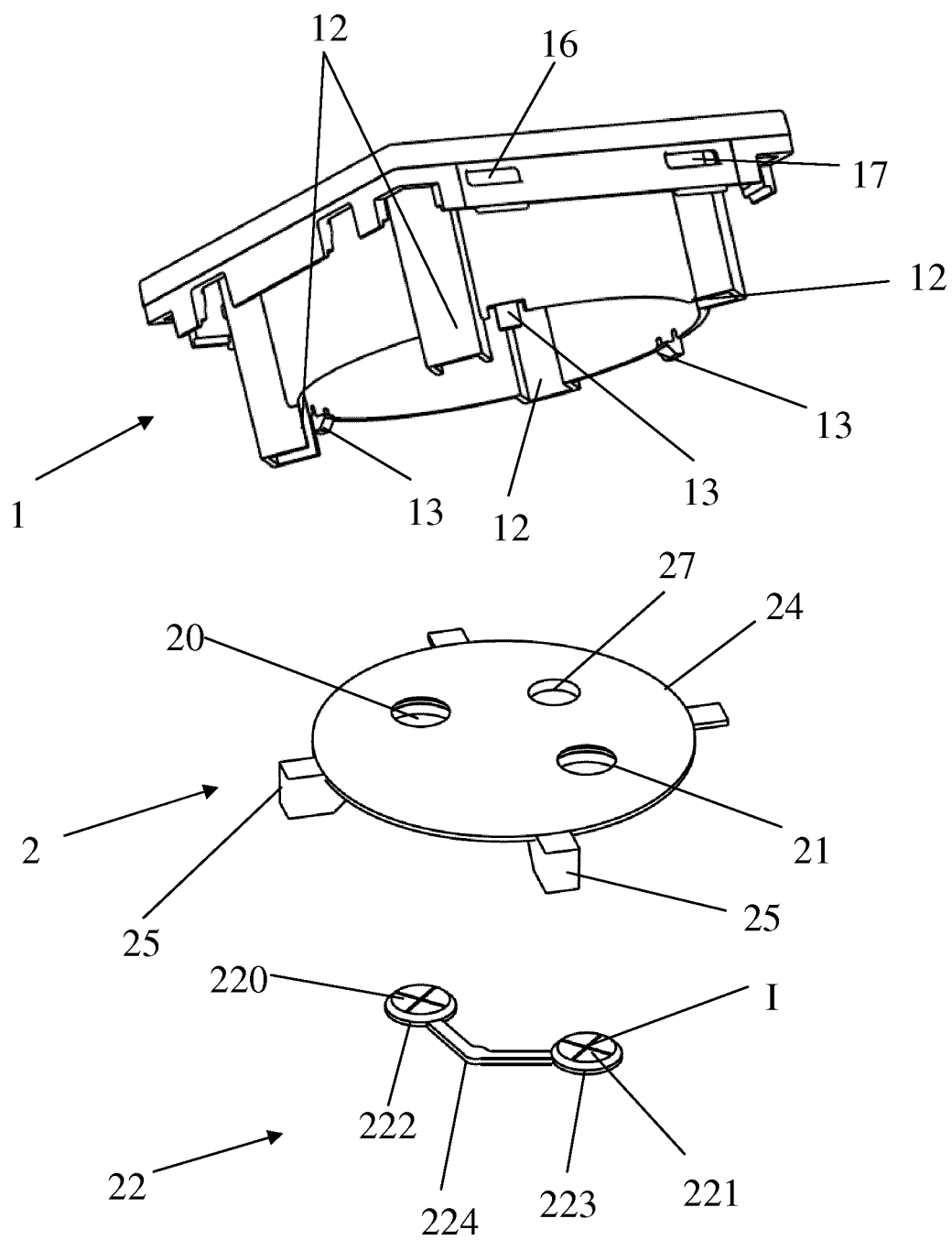
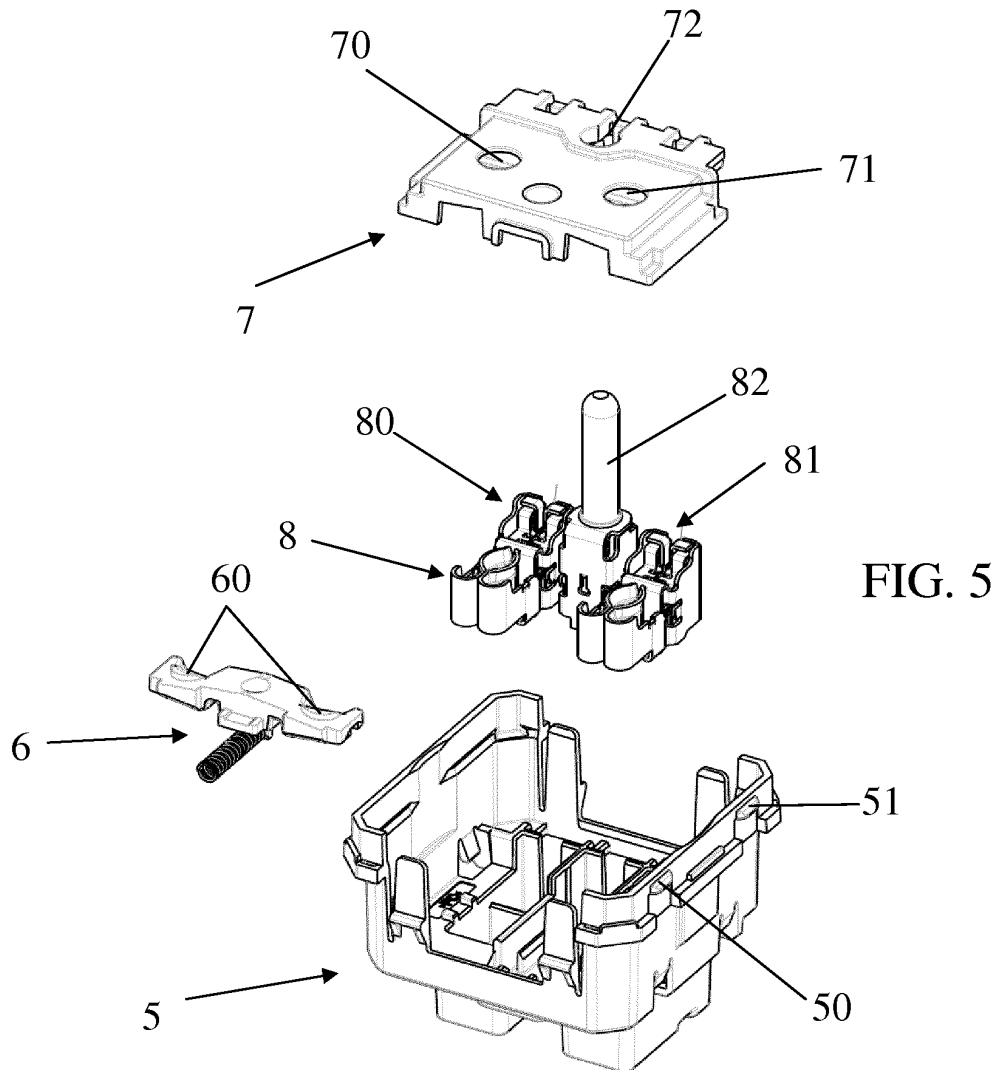
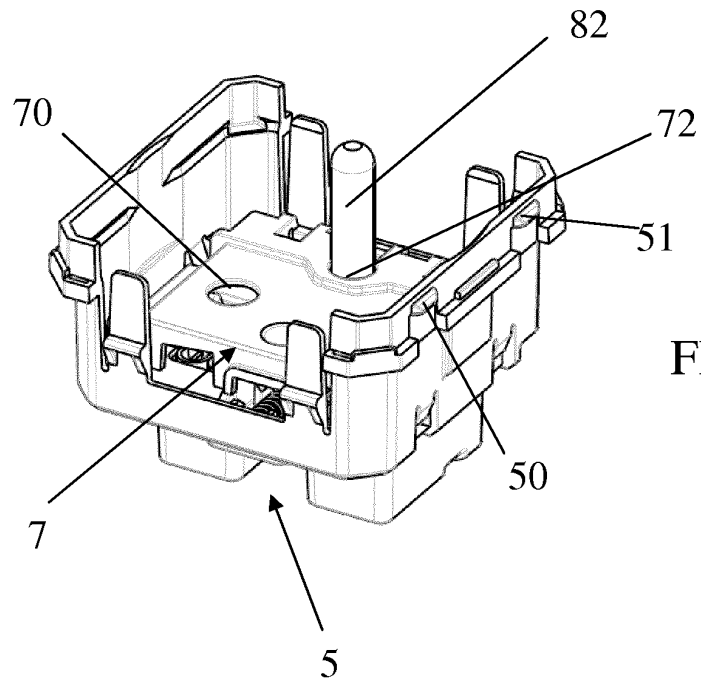


FIG. 3



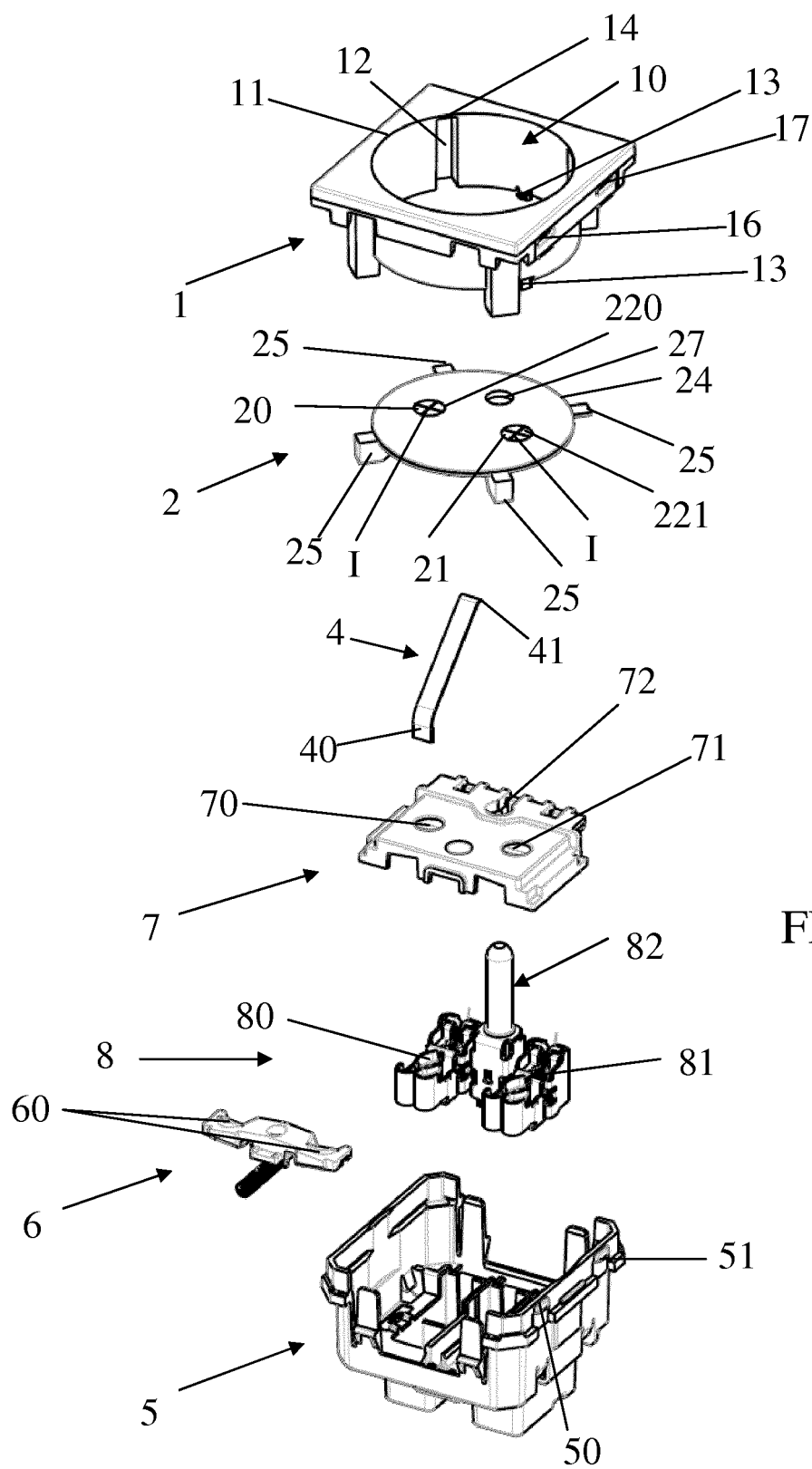
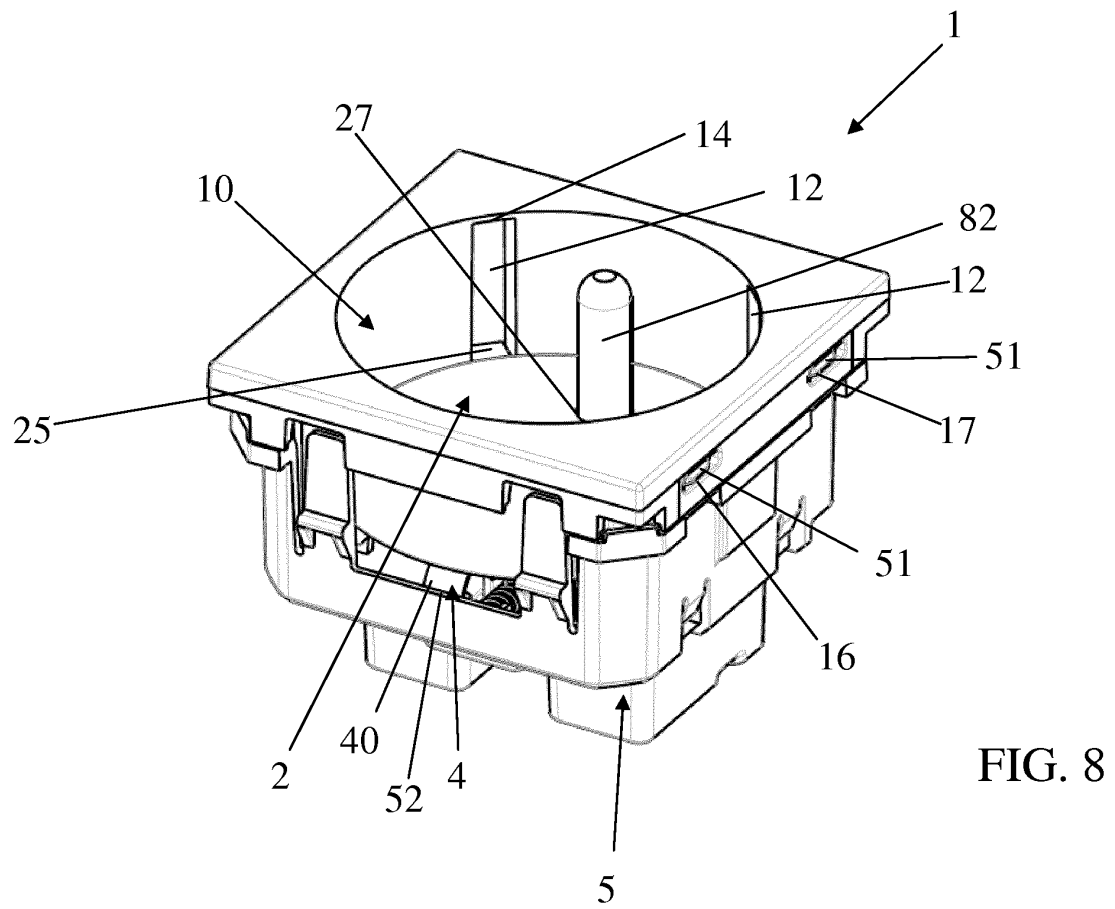
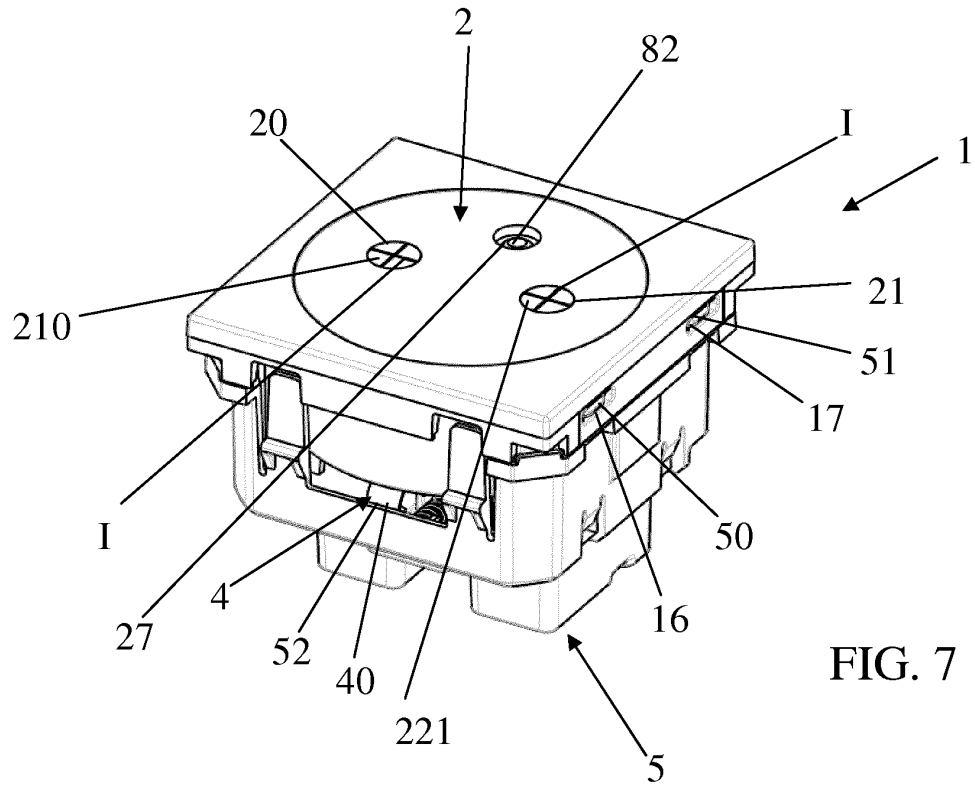


FIG. 6



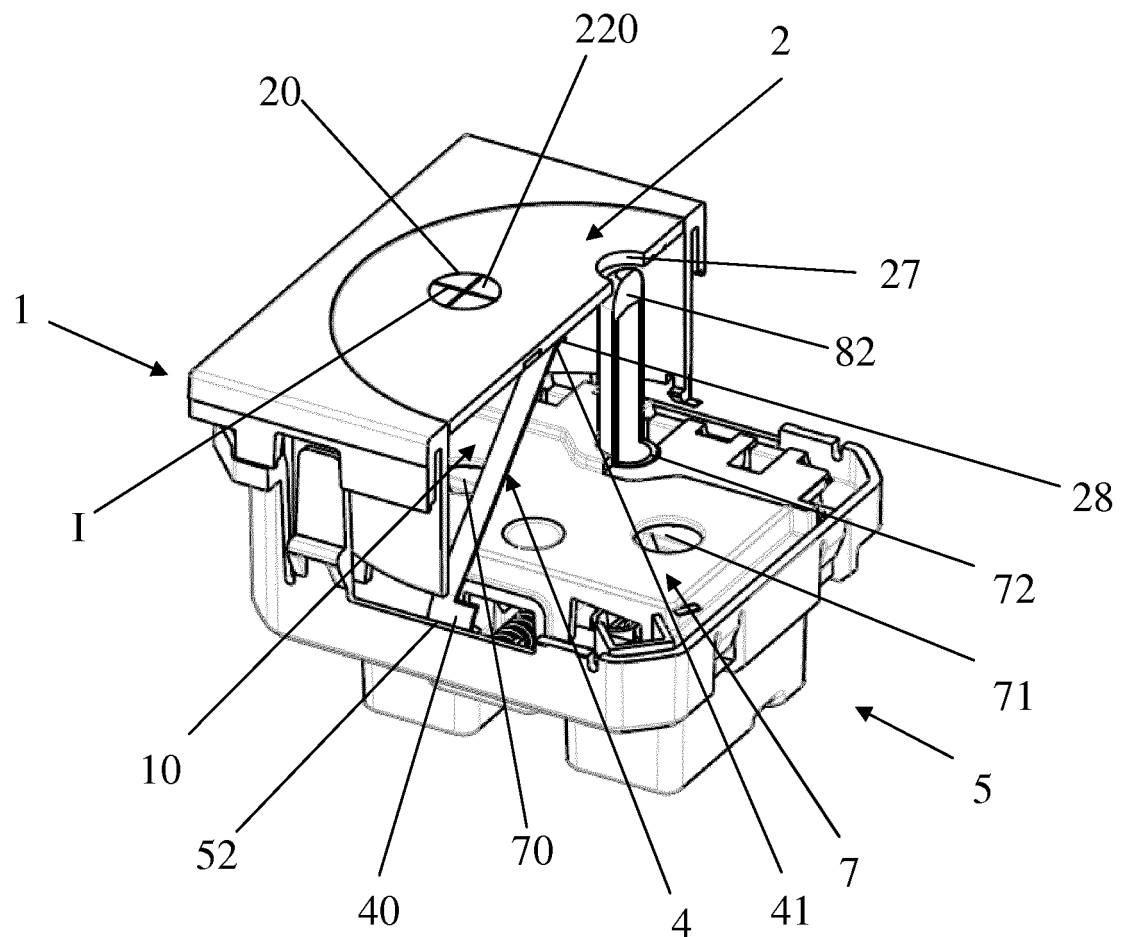


FIG. 9

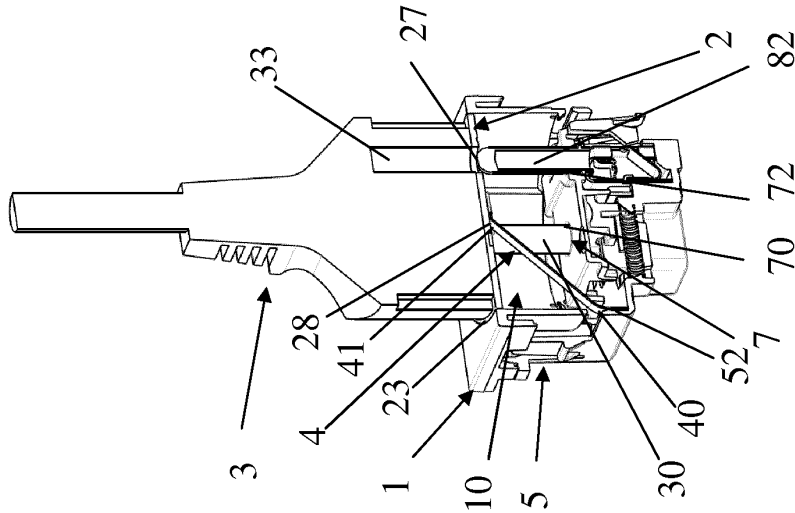


FIG. 10c

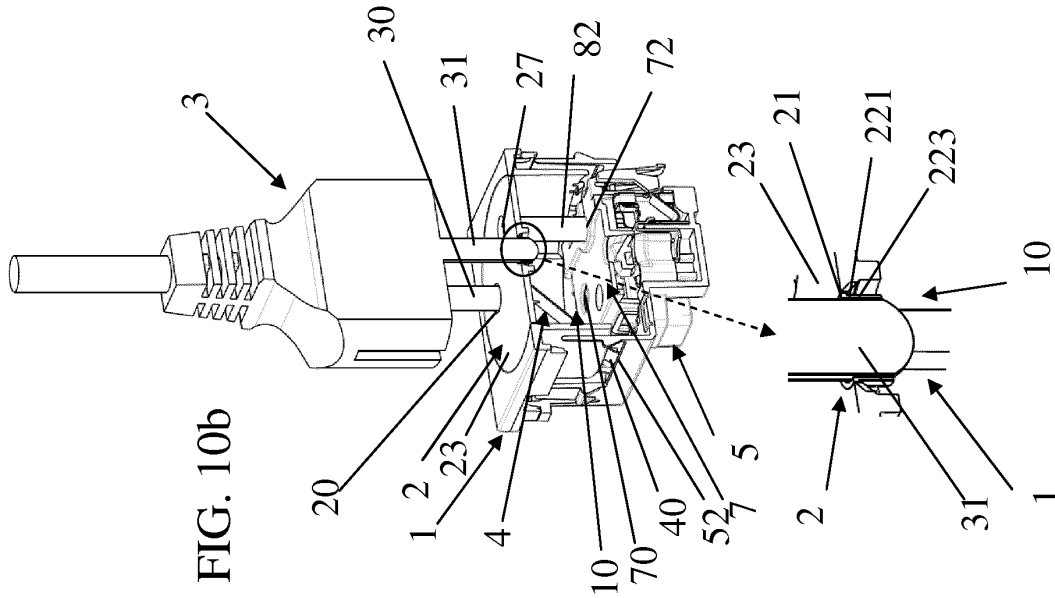


FIG. 10b

FIG. 10

FIG. 10f

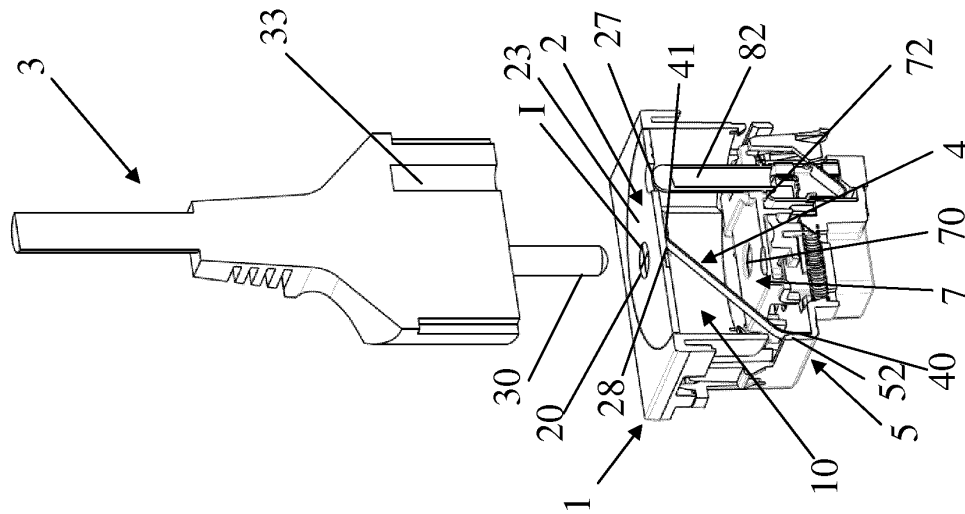


FIG. 10a

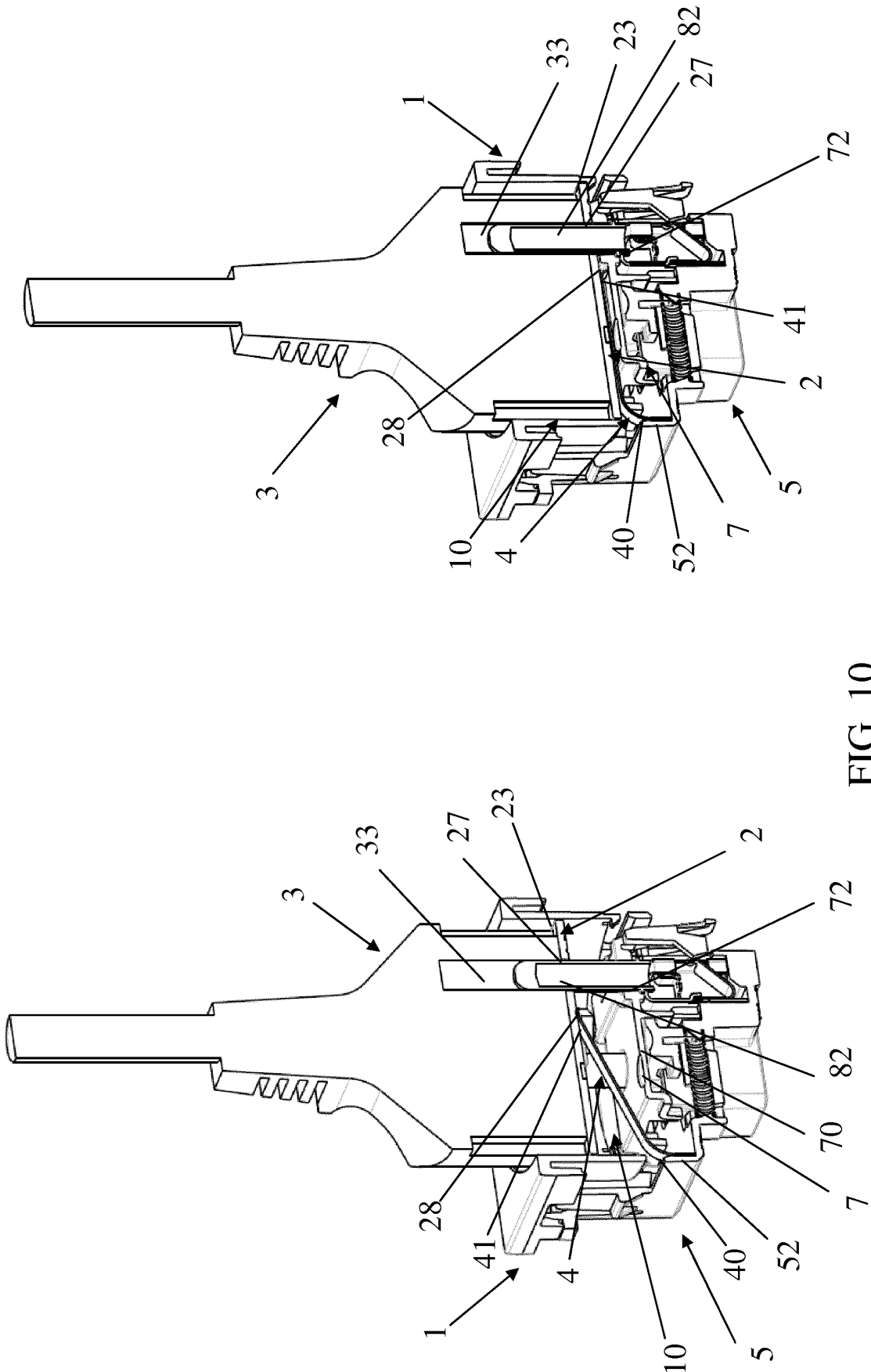


FIG. 10

FIG. 10e

FIG. 10d

REFERENCES CITED IN THE DESCRIPTION

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