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(54) **SPACE-SAVING SCHUKO ELECTRICAL PLUG AND CONTACT BODY SUITED TO BE
ARRANGED IN DIFFERENT POSITIONS WITH RESPECT TO THE PLUG BODY AND THE
CABLE GUIDE**

(57) The invention is a new space-saving electrical plug of the Schuko type, comprising a first covering half-shell (A), a second containment half-shell (B), a contact-holding body (C) having the shape of a Schuko plug with cylindrical pins (Ca, Cb) that constitute the two electrical contacts, and wherein, when coupled in the position of use, said first covering half-shell (A) and said second containment half-shell (B) have a reduced thickness. Said second containment half-shell (B) is provided with a hole (Bo) suited to allow the passage of said contact-holding body (C) and to house it, and wherein on the

edge of or in proximity to said hole (Bo) there are elements or seats or projections (Be). Said contact-holding body (C), on its edge in a position opposite said cylindrical pins (Ca, Cb), is provided with one or more projections (Ce1) directed laterally in a direction generically orthogonal to the axis of said contact-holding body (C). Said elements or seats or projections (Be) of said containment half-shell (B) and said projections (Ce1) of said contact-holding body (C) make it possible to couple said contact-holding body (C) and said second containment half-shell (B) in at least two different angular positions.

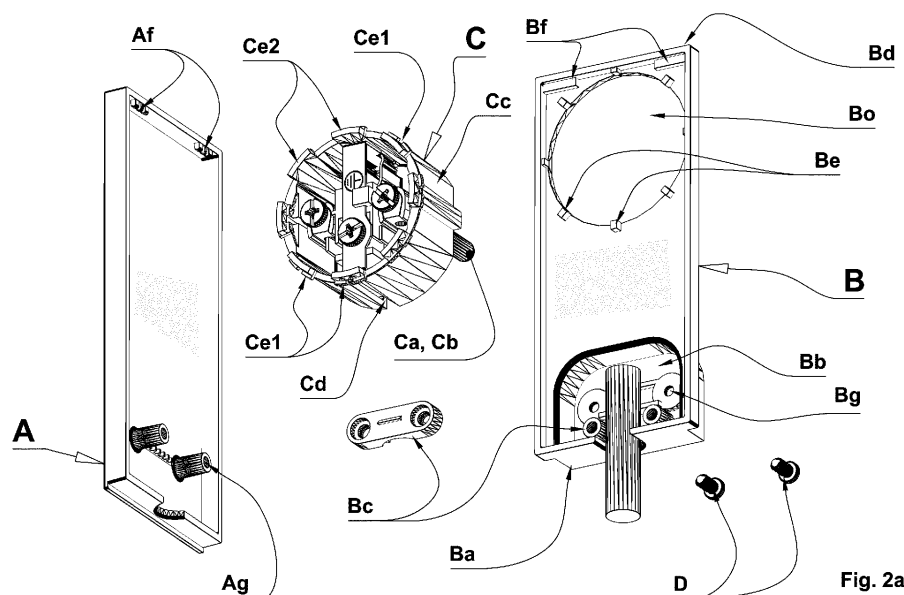


Fig. 2a

Description

[0001] The present patent concerns electrical plugs, and in particular space-saving electrical plugs. Specifically, the present patent concerns a new space-saving electrical plug in which the body holding the electrical contacts can be positioned differently with respect to the plug body or casing serving as grip and terminal container.

[0002] Various types of electrical sockets are known, which are intended for the insertion of corresponding types of electrical plugs.

[0003] Earthed plugs of the French NF or German standard type, called Schuko on the market, are known, which are configured for insertion into corresponding Schuko sockets.

[0004] Said French-type or German-type plugs, hereinafter simply referred to as Schuko, have a substantially cylindrical body with two parallel cylindrical pin-shaped contacts arranged along a diameter of the body itself and two contacts on the cylindrical wall of the body, parallel to the axis of said body. Said Schuko plug body has, on the side opposite said parallel contacts, a part that serves as a grip and a guide for the electrical cable.

[0005] The grip and cable guide part of Schuko plugs is normally oriented generically coaxial with respect to the cylindrical body or generically lateral with respect to said cylindrical body orthogonal to said two contacts.

[0006] Both the actual Schuko plugs, die-cast at the end of an electrical cable, and the Schuko plugs that can be fitted by the user at the end of an electrical cable, made up as described above, take up a lot of space, and when they are inserted in a suitable socket their grip and cable guide part protrudes significantly from the electrical socket.

[0007] So-called space-saving Schuko plugs are known, of the type to be applied to the end of the electrical cable, whose grip and cable guide part, when the plug is inserted in the socket, protrudes from the electrical socket by approximately half a centimetre.

[0008] Said space-saving Schuko plugs make it possible to use Schuko plugs even in sockets that are located behind furniture set against the wall, or in other situations in which the space available in front of the socket is extremely limited.

[0009] Both the standard size and the space-saving Schuko plugs have their grip and cable guide part directed orthogonally to the plane of the two parallel cylindrical pin-shaped contacts.

[0010] However, according to this arrangement, the first section of electrical cable beyond the plug must be oriented in the direction generically orthogonal to the plane of the two cylindrical pin-shaped contacts.

[0011] When the first section of electrical cable beyond the plug is oriented in another direction, it is stretched and as a result the cable exerts lateral forces and pressures on the plug, and the plug exerts lateral forces and pressures in the socket, damaging the socket and the

plug, and giving origin to electrocution hazards.

[0012] In addition, if the cable is not very long or if the cable needs to be hidden behind furniture or if it is necessary to prevent furniture or other objects from being too close to the electrical socket, it would be useful to orient the cable and the grip and cable guide part of the plug in a direction different from the direction orthogonal to the plane of the two cylindrical pin contacts.

[0013] The subject of the present patent is a new, space-saving Schuko-type electrical plug whose contact body can be positioned differently with respect to the grip and the cable guide.

[0014] It is one object of the invention to provide a new Schuko-type electrical plug that occupies a reduced amount of space beyond the cover of the socket into which it is inserted.

[0015] It is another object of the invention to provide a new Schuko-type electrical plug in which the cylindrical pin contacts can be positioned with different inclinations with respect to the grip and cable guide part of the plug.

[0016] These and other direct and complementary objects are achieved by the new space-saving Schuko-type electrical plug with a contact body that can be positioned differently with respect to the grip and cable guide.

[0017] The characteristics of the new Schuko-type electrical plug are better clarified in the following description, making reference to the drawings, which are attached hereto by way of non-limiting example.

Figures 1a and 1b respectively show a side view and an axonometric view of the new plug.

Figure 2a shows the separate parts of the new plug. Figure 3b shows some parts of the new plug in detail.

[0018] The new electrical plug comprises, in its main parts, the following elements:

- a first covering half-shell (A);
- a second containment half-shell (B);
- a contact-holding body (C).

[0019] Said contact-holding body (C) is essentially cylindrical in shape, with an external outline that is equal to the outline of a common Schuko plug.

[0020] On a circular side of said contact-holding body (C) there are two cylindrical pins (Ca, Cb), parallel to each other and parallel to the axis of said contact-holding body (C), which constitute the two electrical contacts of the new Schuko plug.

[0021] On the generically cylindrical surface (Cc) of said contact-holding body (C) there are the two earth contacts (Cd), in the standard positions.

[0022] Inside said contact-holding body (C) there are terminals, screws (Cv), or other mechanical means for the mechanical and electrical connection of the conductor wires of the cable with the cylindrical pins (Ca, Cb).

[0023] On the edge of said contact-holding body (C), in a position opposite said cylindrical pins (Ca, Cb), there

are one or more projections (Ce1, Ce2).

[0024] At least some of said projections (Cel) are laterally oriented in a direction generically orthogonal to said generically cylindrical surface (Cc).

[0025] At least some of said projections (Ce2) are oriented in the direction opposite said cylindrical pins (Ca, Cb) and are generally parallel to the axis of said contact-holding body (C).

[0026] The second containment half-shell (B) is generically in the shape of a rectangular tray.

[0027] In proximity to the short side (Ba) of said containment half-shell (B), the latter is provided with a housing (Bb) that is thicker than the rest of said second containment half-shell (B) and suited to accommodate a cable clamp (Bc).

[0028] In proximity to the opposite short side (Bd) of said second containment half-shell (B) there is a hole (Bo) suited to allow the passage of said contact-holding body (C) and to house it.

[0029] In particular, on the edge of said hole (Bo), said second containment half-shell (B) is provided with elements or seats or projections (Be) suited to receive and to be coupled with said projection or projections (Cel) protruding laterally from said contact-holding body (C).

[0030] The first covering half-shell (A) is generically in the form of a rectangular tray suited to be coupled with said second containment half-shell (B).

[0031] Said first covering half-shell (A) and said second containment half-shell (B) are provided with couplings, elements, projections or other equivalent parts (Af, Bf) suited to connect and constrain said first covering half-shell (A) and said second containment half-shell (B).

[0032] When the various parts of the new plug are assembled together for normal use, the thickness of said first covering half-shell (A) joined to said second containment half-shell (B) is equal or comparable to the thickness of the known space-saving plugs.

[0033] Said first covering half-shell (A) and said second containment half-shell (B) are provided with holes (Bg) and seats (Ag) for the connection and stable closing of said two half-shells (A, B) with screws (D) or equivalent fixing elements.

[0034] During normal use, the contact-holding body (C) is inserted into the hole (Bo) of said second containment half-shell (B) in such a way that said projections (Cel) of the contact-holding body (C) are coupled with said elements or seats or projections (Be) of said second containment half-shell (B), preventing the rotation of the contact-holding body (C) itself with respect to said second containment half-shell (B).

[0035] The first covering half-shell (A) is coupled and joined to said second containment half-shell (B) in such a way as to cover the cable clamp (Bc).

[0036] Should it be necessary to orient the electrical cable differently with respect to the cylindrical pins (Ca, Cb) of the electrical contacts, it is sufficient to separate the first covering half-shell (A) from the second containment half-shell (B), to at least partially withdraw the con-

tact-holding body (C) from the second containment half-shell (B), as visible in Figures 3b and 4a, and to reintroduce it in the desired position, so that said projections (Cel) of the contact-holding body (C) are coupled with said elements or seats or projections (Be) of said second half-shell (B), as visible in Figures 3c and 4b.

[0037] Finally, said first covering half-shell (A) is joined and fixed again to the second containment half-shell (B).

[0038] The new space-saving Schuko-type electrical plug made as described above has considerable advantages.

[0039] The new Schuko-type electrical plug occupies less space beyond the cover of the socket into which it is inserted.

[0040] The new Schuko-type electrical plug is not bound to a single predefined position of the cable with respect to the electrical contacts.

[0041] The new Schuko-type electrical plug allows the electrical contacts to be positioned with different inclinations with respect to the grip and cable guide part of the plug.

[0042] The new Schuko-type electrical plug can also be used with sockets that are located behind furniture set against the wall, or in other situations in which the space available in front of the socket is extremely limited.

[0043] Therefore, with reference to the above description and the attached drawings, the following claims are made.

Claims

1. Space-saving Schuko electrical plug, comprising a first covering half-shell (A), a second containment half-shell (B), a contact-holding body (C) having the shape of a Schuko-type plug with cylindrical pins (Ca, Cb) that constitute the two electrical contacts, and wherein, when coupled in the position of use, said first covering half-shell (A) and said second containment half-shell (B) have a reduced thickness, **characterized in that**

- said second containment half-shell (B) is provided with a hole (Bo) suited to allow the passage of said contact-holding body (C) and to house it, and wherein on the edge of or in proximity to said hole (Bo) there are elements or seats or projections (Be),

- said contact-holding body (C), on its edge in a position opposite said cylindrical pins (Ca, Cb), is provided with one or more projections (Cel) directed laterally in a direction generically orthogonal to the axis of said contact-holding body (C),

and wherein said elements or seats or projections (Be) of said containment half-shell (B) and said projections (Cel) of said contact-holding body (C) allow

said contact-holding body (C) and said second containment half-shell (B) to be coupled with each other in at least two different angular positions.

2. Space-saving Schuko electrical plug according to claim 1, **characterized in that** said contact-holding body (C) has, on its edge in a position opposite said cylindrical pins (Ca, Cb), one or more projections (Ce2) directed in the opposite direction with respect to said cylindrical pins (Ca, Cb) and generically parallel to the axis of said contact-holding body (C). 5
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3. Space-saving Schuko electrical plug according to claim 1 or 2, **characterized in that** said first covering half-shell (A) can be separated from said second containment half-shell (B) in such a way as to make it possible to at least partially extract said contact-holding body (C) from the second containment half-shell (B) and to reintroduce it in the desired position so that said projections (Ce1) of the contact-holding body (C) are coupled with said other elements or seats or projections (Be) of said second half-shell (B), and wherein said first covering half-shell (A) is joined and secured again to the second containment half-shell (B). 15
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4. Space-saving Schuko electrical plug according to the preceding claims, **characterized in that** said second containment half-shell (B) is provided, in a position opposite said hole (Bo) for housing said contact-holding body (C), with a housing (Bb) suited to accommodate a cable clamp (Bc). 30
5. Space-saving Schuko electrical plug according to the preceding claims, **characterized in that** said first covering half-shell (A) and said second containment half-shell (B) are provided with couplings, elements, projections or other equivalent parts (Af, Bf) suited to connect and constrain said first covering half-shell (A) and said second containment half-shell (B). 35
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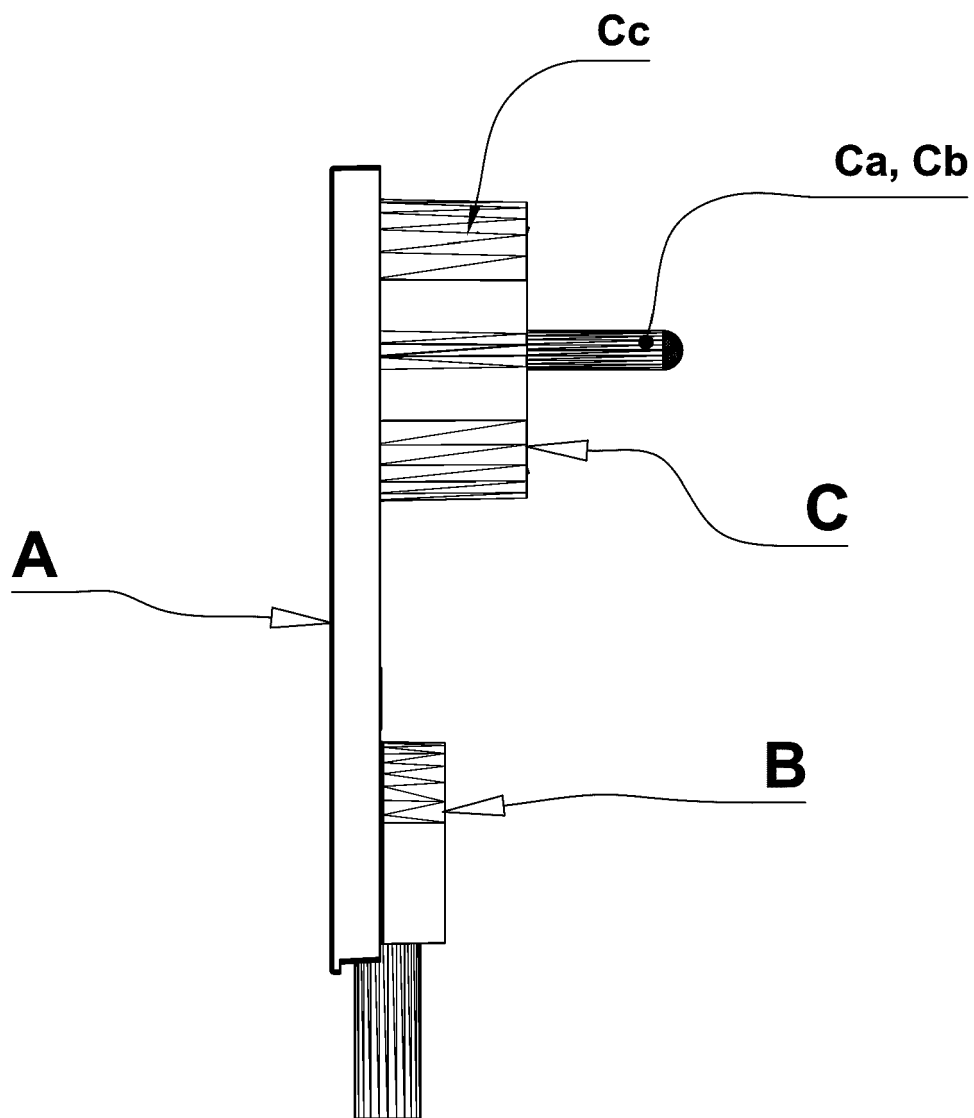


Fig. 1a

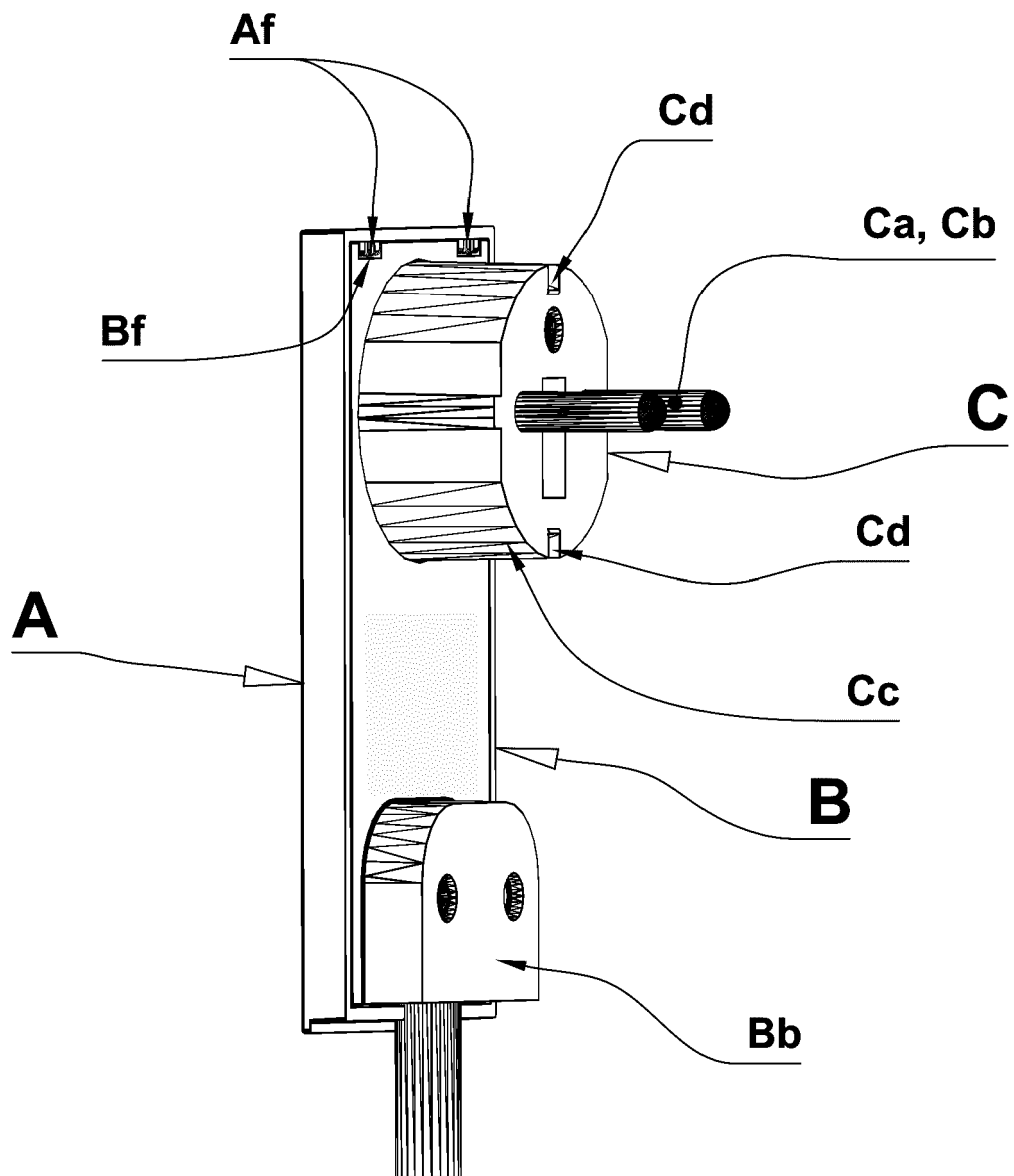


Fig. 1b

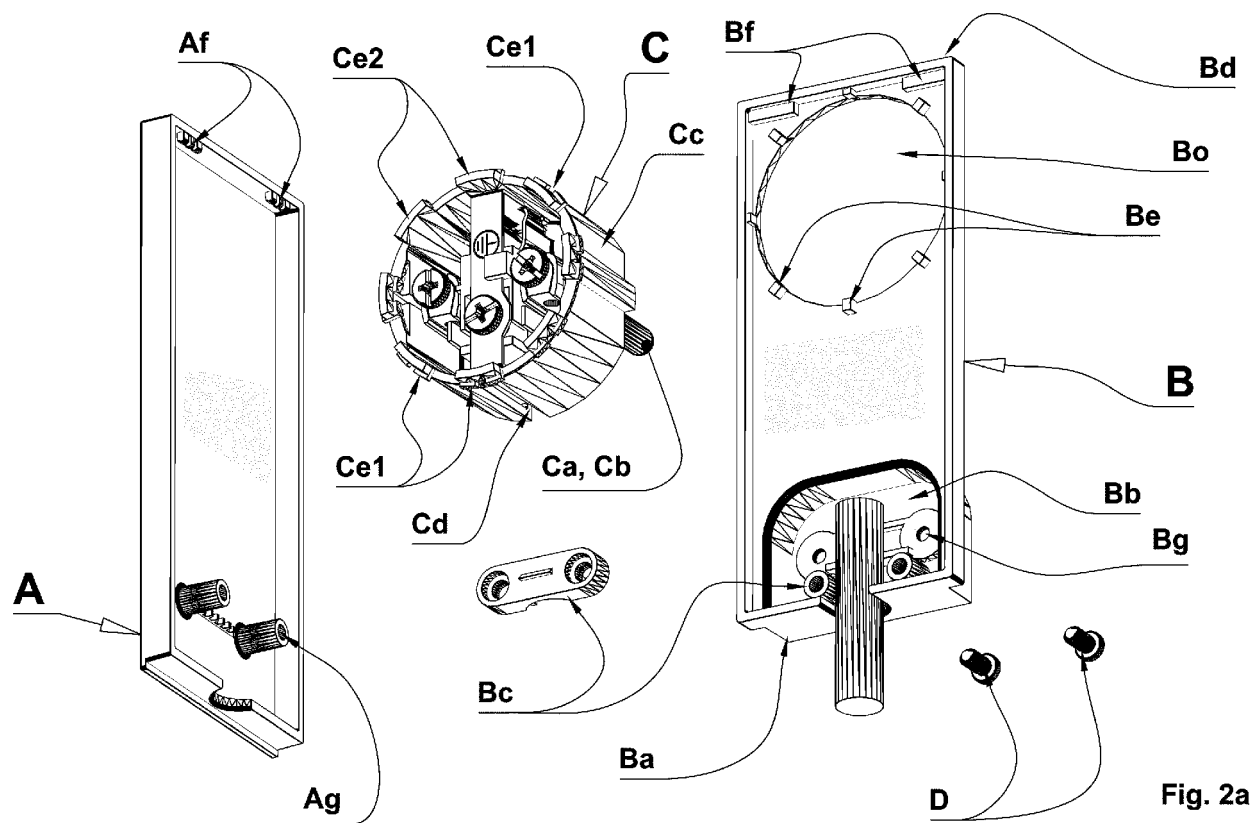


Fig. 2a

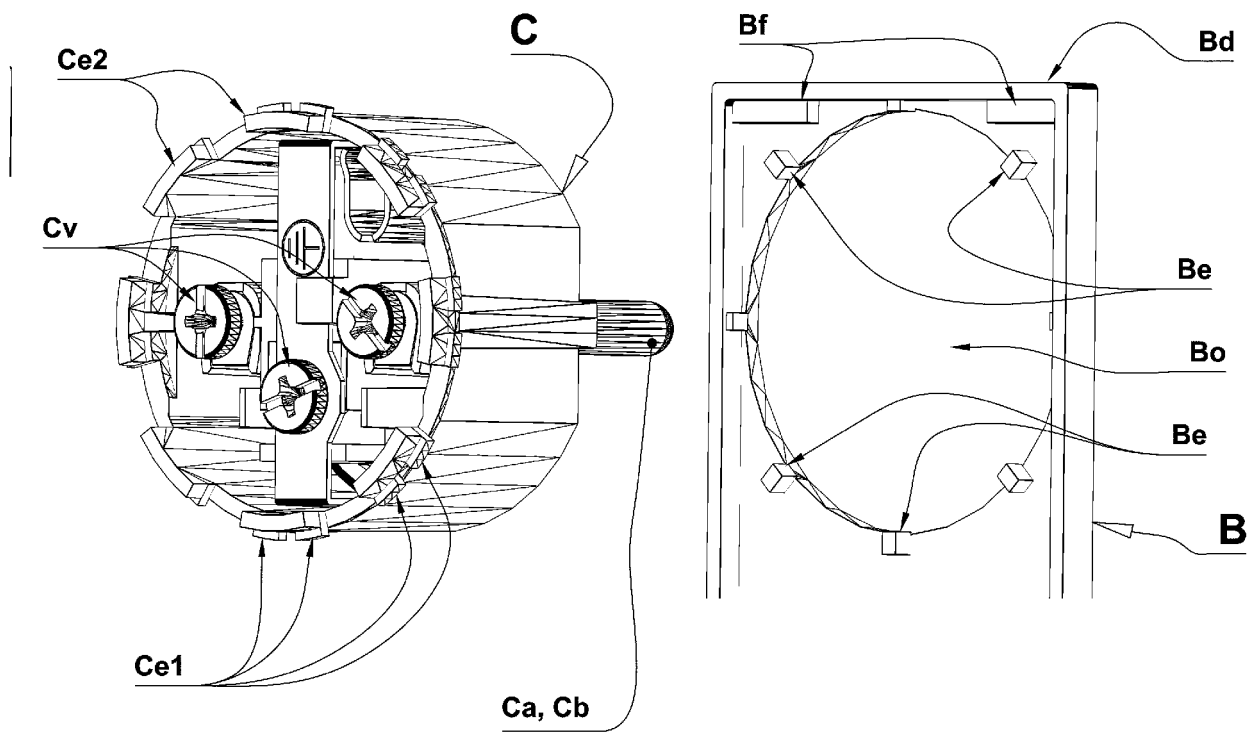


Fig. 2b

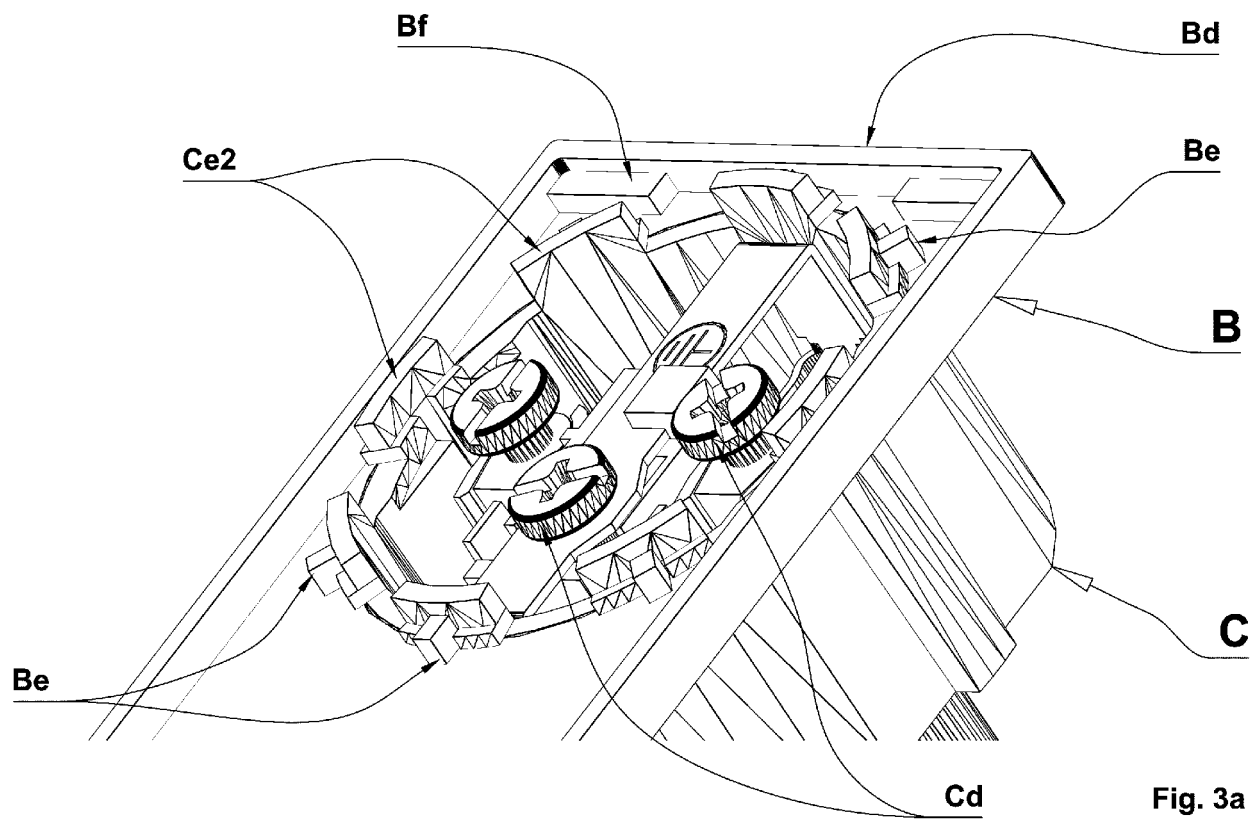


Fig. 3a

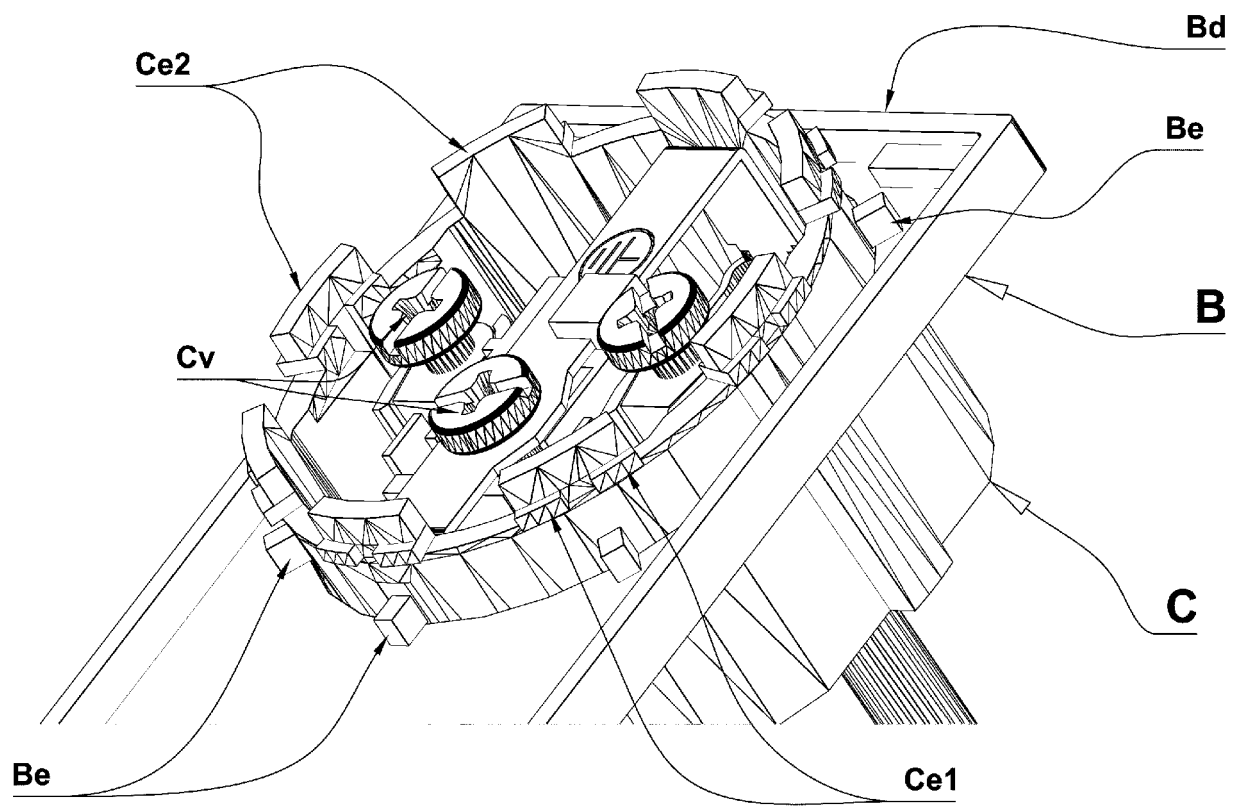


Fig. 3b

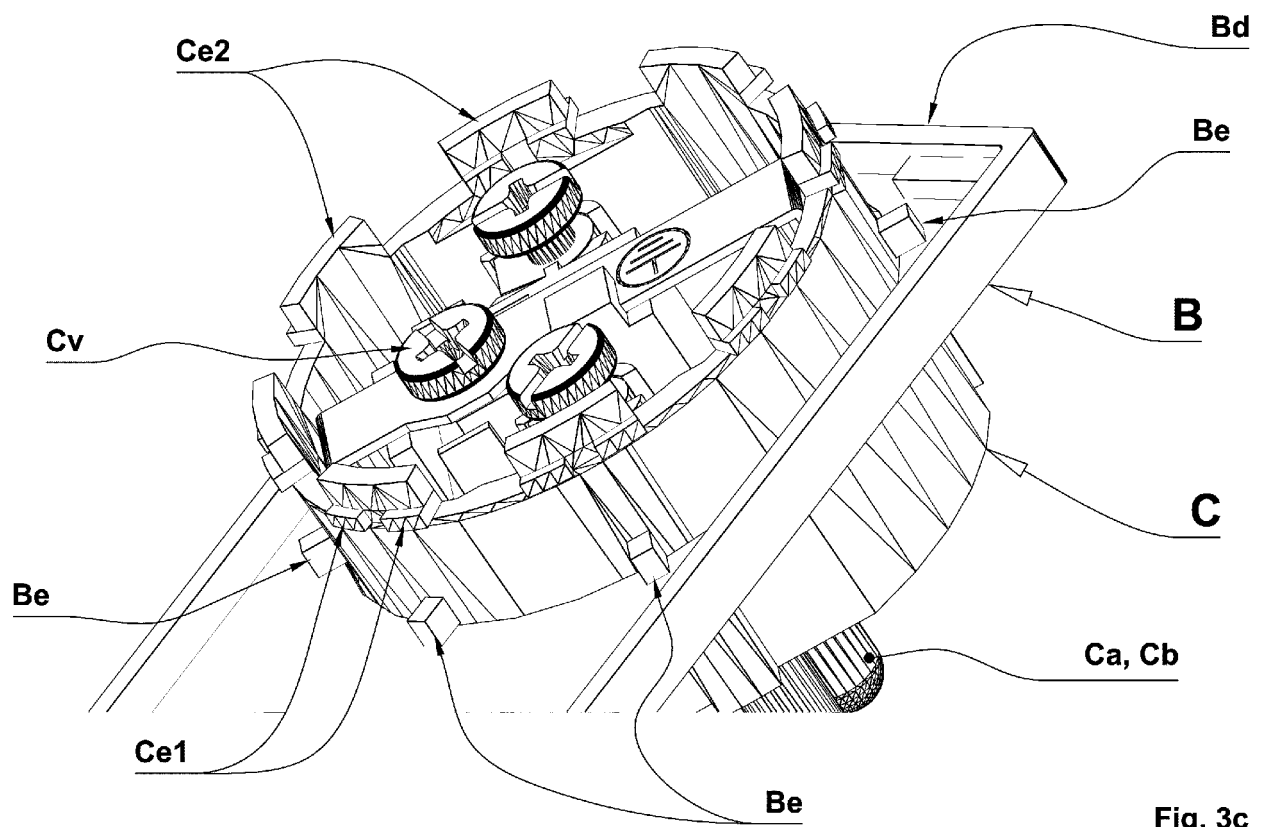


Fig. 3c

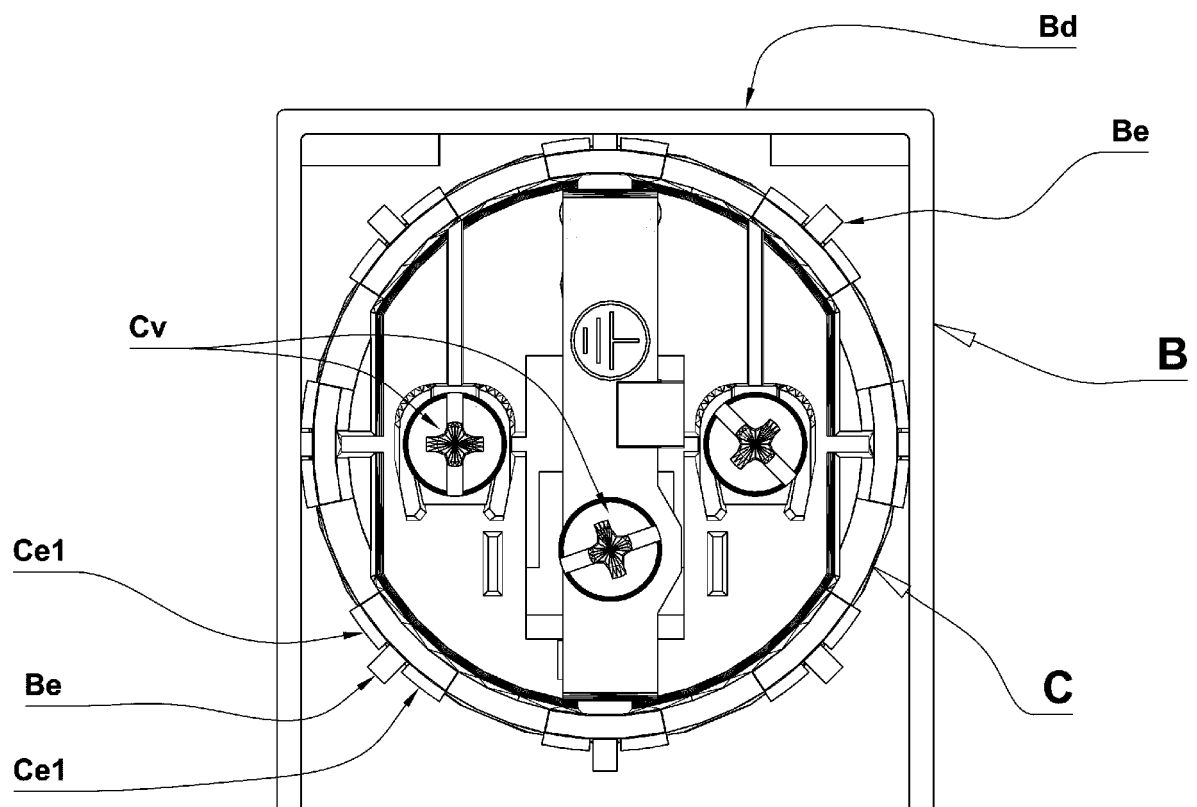


Fig. 4a

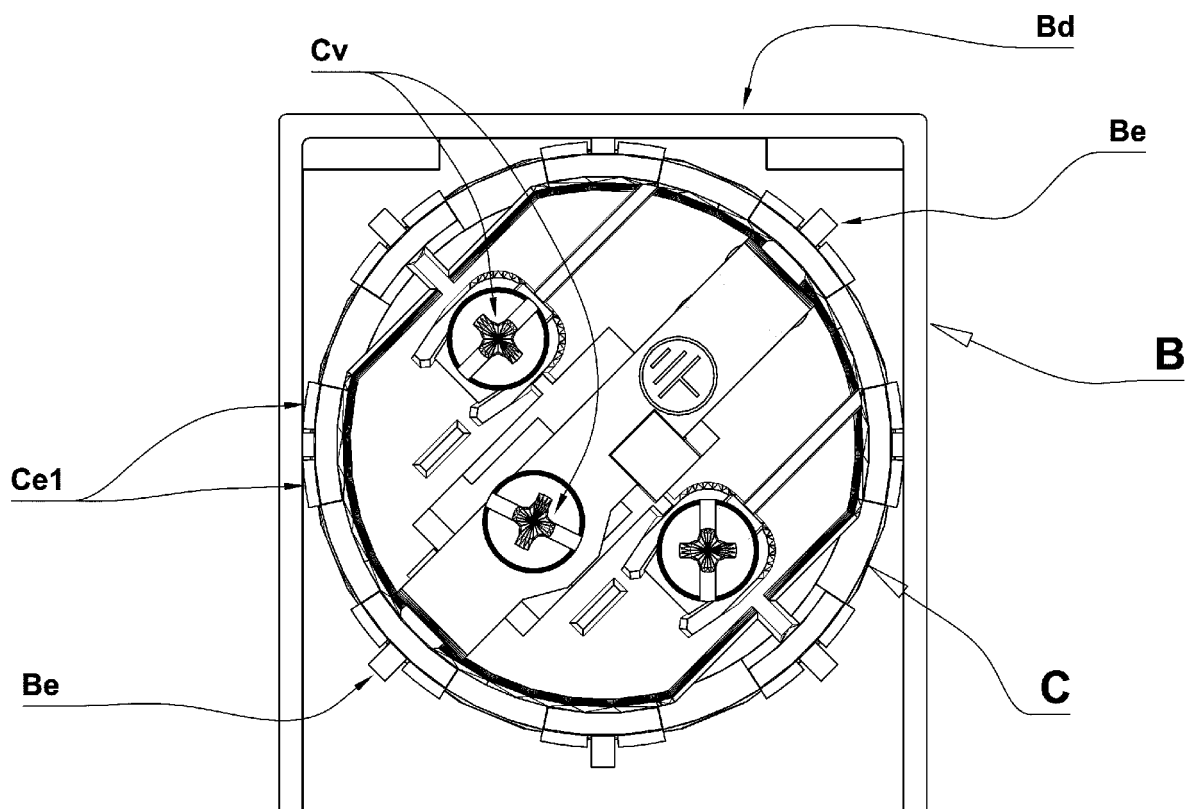


Fig. 4b



EUROPEAN SEARCH REPORT

Application Number

EP 23 20 0012

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EPO FORM 1503 03.82 (P04C01)

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			TECHNICAL FIELDS SEARCHED (IPC)
			H01R
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 December 2023	Examiner Philippot, Bertrand
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	

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 23 20 0012

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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