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(54) **Installation box for electric appliances**

Installationsdose für elektrische Geräte

Boîtier d'installation pour appareils électriques

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Description

[0001] The invention relates to an installation box for electric appliances, said installation box consisting of a desired number of socket modules, each socket module comprising

- a bottom;
- two opposite side walls;
- attachment means projecting from the bottom and/or the side walls for attaching electric appliances; and
- engagement brackets at the side walls' upper edges for fastening the installation box to the rims of a trunking or some other socket frame installation opening,
- first coupling means present at a first end and second coupling means present at a second end of the socket module, which establish a preformed locking with the first coupling means of another socket module, the installation box being infinitely extendable by way of socket modules.

[0002] This type of installation box is prior known from the Applicant's patent application EP 1 209 785 A1. The electric appliances to be fitted in an installation box include particularly socket-outlets, but may also be switches, pushbuttons, and dimmers, used for the distribution and control of electricity in homes, offices and the like premises.

[0003] It is an object of the invention to develop this prior known installation box further in such a way that, while providing even more versatile applications therefor, it enables minimizing the amount of on-site installation work.

[0004] This object is accomplished by the invention on the basis of the characterizing features set forth in the appended claim 1. The dependent claims disclose preferred embodiments and configurations for the invention.

[0005] The invention will now be described in more detail by way of an exemplary embodiment with reference to the accompanying drawings, which illustrate the invention in a socket application and in which

Fig. 1 shows axonometrically two socket-outlets, which are connectible together both electrically and mechanically by means of connectors 7, 8 between the socket-outlets.

Fig. 2 shows axonometrically a socket frame 10 for a socket-outlet or a socket module for an installation box,

Fig. 3 is an axonometric assembly view, showing connectors included in a socket-outlet of the invention,

Fig. 4 is a plan view, showing two connected socket-outlets, with a connector area cover plate removed, and

Fig. 5 shows the same as fig. 4, but with a cover plate in its position.

[0006] First described is a basic principle for the socket frame or socket module 10 with reference to figs. 1 and 2. The socket frame 10 comprises a bottom 1 and two opposite side walls 2. From the bottom extend attachment means 3a, 3b for attaching an actual socket-outlet appliance along with its cover 9.

[0007] The side walls 2 have their upper edges provided with engagement brackets 4, 5 for fastening the installation box to the rims of a trunking or other socket frame installation opening. In the present case, the engagement brackets include wedge-shaped projecting lugs 4, which connect with flexible tabs 6 in the side walls 2 and establish projecting response surfaces close to the free ends of the tabs 6. The side walls 2 have their upper edges provided with flanges 5, which lie at a small distance from the response surfaces of the lugs 4. The rims of a trunking or some other socket frame installation opening are provided with an engagement formation or an engagement rail, which is engageable between the flanges 5 and the lugs 4 as a preassembled socket-outlet or socket assembly is inserted in the installation opening.

[0008] The socket frame 10 constitutes a socket module. In the embodiment of fig. 1, two socket modules are assembled together electrically and mechanically by means of connectors 7 and 8, as subsequently described in more detail. The attachment means between the socket frame 10 and the socket-outlet fixture element 9 comprise, as shown in fig. 2, semi-circular pins 3a and hook-like pillars 3b adjacent thereto, providing a snap-on connection with the engagement brackets of the socket-outlet 9 to be mounted on the socket frame 10. Alternatively, the attachment means may comprise screwfastening pillars, located adjacent to the side walls 2.

[0009] Each socket module 10 has its first end provided with first coupling means 11 and its second end with second coupling means 12 for establishing a preformed locking with the first coupling means 11 of another socket module 10. By virtue of these coupling means, the socket-outlet is infinitely extendable with the socket modules 10. Although the socket modules 10 can be attached also directly to each other, the coupling means 11, 12 are used in the present invention for securing the connectors 7 and 8 between boxes.

[0010] In the present case, the coupling means 11, 12 comprise profiled uprights at the ends of the side walls 2. The coupling means 11 at one end of the socket module 10 are constituted by T- or H-pillars 11 and the coupling means at the other end by C-pillars 12, which are dimensioned to fit around the T-top or the H-leg of the T- or H-pillars, respectively. Naturally, other types of profiled shapes can be relevant as well.

[0011] The socket modules 10 have their ends near the bottom 1 provided with threshold-like end walls 13, 14, whose height is less than half of that of the side walls 2. The end walls 13, 14 are provided with snap-on locking

means 15, 16 for locking the socket modules 10 flush with each other, in case the socket modules are coupled for a direct extension of each other. This snap-on connection must be readily disconnectable for the reuse and/or rearrangement of modules.

[0012] Fig. 3 illustrates more clearly the design of bayonet connectors. The connectors include a 5-pole female connector element 7 and a 5-pole male connector element 8, as well as mountings 7a, 8a for attaching the connector elements 7, 8 thereto. The mountings 7a, 8a are in turn attachable to the ends of the socket frame 10. The mounting 7a is provided with coupling means 11' for establishing a preformed locking with the coupling means 12 present at one end of the socket frame 10. The mounting 8a is provided with coupling means 12' for establishing a preformed locking with the coupling means 11 present at the other end of the socket frame 10. The mountings 7a and 8a have their engagement brackets 20 engageable with attachment recesses 21 in the connectors 7 and 8. The connectors 7 and 8 have their side faces provided with clasps 17 and 18 to prevent a decoupling of the coupled connectors 7 and 8. The mountings 7a and 8a are provided with locking members 16 and 15 (not visible), matching the complementary locking members 15 and 16 of the socket modules 10 to enable locking of the mountings 7a, 8a and the connectors 7, 8 at a specified height within the socket module 10.

[0013] Figs. 1 and 4 only illustrate the connectors 7 and 8 between socket-outlets. However, the opposite end of a socket-outlet with a connector 7 will receive a connector 8 and the opposite end of a socket-outlet with a connector 8 will receive a connector 7. These connectors enable connections either with an intermediate cable or with another socket-outlet. Fig. 4 visualizes that the assembled connectors 7, 8 are dimensioned to equal the length of a single socket module 10 and the connectors 7, 8 are concealable with a cover plate 22 (figs. 1 and 5) pressable securely onto fastening members 19 rising from the mountings 7a, 8a (in the present case, a mortise and tenon joint).

[0014] The connectors 7, 8 present at the opposite ends of each socket-outlet 9, 10 are linked with each other by way of cables. The 5-pole connectors 7 and 8 have three poles for three-phase linking, one pole for an 0-cable, and one pole for protective grounding.

[0015] The invention is not limited to the above-described structural embodiment of a socket-outlet and connectors. For example, the connectors 7, 8 can be made in one piece with their respective mountings 7a and 8a. The connectors 7 and 8 need not be dimensioned for a length equal to that of the socket module 10, but it can be shorter, e.g. a half of the socket module's 10 length, the cover plate 22 being respectively shorter. The releasable attachment of the connectors 7 and 8 facilitates the fabrication of components and enables a versatile application for the socket modules 10, such that the installation boxes can be optionally coupled either directly or by way of connectors as an extension of each

other.

Claims

1. An installation box for electric appliances, said installation box consisting of a desired number of socket modules (10), each socket module (10) comprising

- a bottom (1);
- two opposite side walls (2);
- attachment means (3) projecting from the bottom and/or the sidewalls for attaching electric appliances; and
- engagement brackets (4, 5) at the side walls' upper edges for fastening the installation box to the rims of a trunking or some other socket frame installation opening,
- first coupling means (11) present at a first end and second coupling means (12) present at a second end of the socket module (10), which establish a preformed locking with the first coupling means (11) of another socket module (10), the installation box being infinitely extendable by way of socket modules (10),

characterized in that the socket modules (10) have their ends provided with connectors (7, 8), including a female connector element (7) and a male connector element (8) which is compatible with the female connector element (7) present at the end of an adjacent socket module (10) for mechanical and electrical connection between the connectors (7, 8), and that some of the connectors (7, 8) are provided with coupling means (12') to establish a preformed locking with said first coupling means (11) and some of the connectors (7, 8) are provided with coupling means (11') to establish a preformed locking with said second coupling means (12), whereby the socket modules (10) can be selectively coupled either directly or by way of the mechanical and electrical connection between the connectors (7, 8) as an extension of each other, and that the connectors (7, 8) are provided with fastening members (19) for the attachment of a cover plate (22) concealing the area occupied by the mutually connected connectors (7, 8).

2. An installation box as set forth in claim 1, **characterized in that** the connectors include a multi-pole female connector element (7) and a multipole male connector element (8), as well as mountings (7a, 8a), upon which the connector elements (7, 8) are mountable and which mountings (7a, 8a) are fastenable to the ends of the socket module (10).

3. An installation box as set forth in claim 2, **characterized in that** the connectors include a multi-pole female connector element (7) and a multipole male connector element (8), as well as mountings (7a, 8a), upon which the connector elements (7, 8) are mountable and which mountings (7a, 8a) are fastenable to the ends of the socket module (10).

terized in that some (8a) of the mountings (7a, 8a) are provided with coupling means (12') to establish a preformed locking with first coupling means (11) present at one end of the socket module (10), and some (7a) of the mountings (7a, 8a) are provided with coupling means (11') to establish a preformed locking with second coupling means (12) present at a second end of the socket module (10).

4. An installation box as set forth in claim 2 or 3, **characterized in that** the fastening members (19) for the cover plate (22) are included in the mountings (7a, 8a).

Patentansprüche

1. Installationsdose für elektrische Geräte, wobei die Installationsdose aus einer gewünschten Anzahl von Steckdosen-Modulen (10) besteht, wobei jedes Steckdosen-Modul (10) aufweist:

- einen Boden (1);
- zwei gegenüberliegende Seitenwände (2);
- Anbringungsmittel (3), die von dem Boden und/oder den Seitenwänden hervorstehen, zum Anbringen elektrischer Geräte;
- Eingriffsklammern (4, 5) an den oberen Kanten der Seitenwände zum Befestigen der Installationsdose an den Rändern einer Hauptleitung bzw. eines Kabelkanals oder einer anderen Steckdosenrahmen-Installationsöffnung;
- an einem ersten Ende vorhandene erste Kupplungsmittel (11) und an einem zweiten Ende des Steckdosen-Moduls (10) vorhandene zweite Kupplungsmittel (12), die mit den ersten Kopplungsmitteln (11) eines anderen Steckdosen-Moduls (10) eine vorgeformte Verriegelung bilden, wobei die Installationsdose mittels Steckdosen-Modulen (10) unendlich erweiterbar ist,

dadurch gekennzeichnet, dass die Enden der Steckdosen-Module (10) mit Verbindungsvorrichtungen (7, 8) ausgestattet sind, die ein Büchselement (7) und ein Steckerelement (8) umfassen, welches mit dem Büchselement (7) kompatibel ist, das am Ende eines angrenzenden Steckdosen-Moduls (10) zur mechanischen und elektrischen Verbindung zwischen den Verbindungsvorrichtungen (7, 8) vorhanden ist, und dass einige der Verbindungsvorrichtungen (7, 8) mit Kopplungsmitteln (12') ausgestattet sind, um eine vorgeformte Verriegelung mit den ersten Kopplungsmitteln (11) zu bilden, und einige der Verbindungsvorrichtungen (7, 8) mit Kopplungsmitteln (11') ausgestattet sind, um eine vorgeformte Verriegelung mit den zweiten Kopplungsmitteln (12) zu bilden, wodurch die Steckdosen-Module (10) selektiv entweder direkt oder mit-

tels der mechanischen und elektrischen Verbindung zwischen den Verbindungsvorrichtungen (7, 8) als eine Erweiterung jedes anderen gekoppelt werden können, und dass die Verbindungsvorrichtungen (7, 8) mit Befestigungsgliedern (19) zur Anbringung einer Abdeckplatte (22), welche den durch die miteinander verbundenen Verbindungsvorrichtungen (7, 8) eingenommenen Bereich verdickt, ausgestattet sind.

2. Installationsdose nach Anspruch 1, **dadurch gekennzeichnet, dass** die Verbindungsvorrichtungen ein mehrpoliges Buchsen-Verbindungselement (7) und ein mehrpoliges Stift-Verbindungselement (8) sowie Montierelemente (7a, 8a), auf denen die Verbindungsvorrichtungen (7, 8) montierbar sind, enthalten, wobei die Montierelemente (7a, 8a) an den Enden des Steckdosenmoduls (10) befestigbar sind.

3. Installationsdose nach Anspruch 2, **dadurch gekennzeichnet, dass** einige (8a) der Montierelemente (7a, 8a) mit Kopplungsmitteln (12') ausgestattet sind, um eine vorgeformte Verriegelung mit den ersten Kopplungsmitteln (11) zu bilden, die an einem Ende des Steckdosenmoduls (10) vorhanden sind, und einige (7a) der Montierelemente (7a, 8a) mit Kopplungsmitteln (11') ausgestattet sind, um eine vorgeformte Verriegelung mit den zweiten Kopplungsmitteln (12) zu bilden, die an einem zweiten Ende des Steckdosenmoduls (10) vorhanden sind.

4. Installationsdose nach Anspruch 2 oder 3, **dadurch gekennzeichnet, dass** die Befestigungsglieder (19) für die Abdeckplatte (22) in den Montierelementen (7a, 8a) enthalten sind.

Revendications

1. Boîtier d'installation pour appareils électriques, ledit boîtier d'installation se composant d'un nombre souhaité de modules de prise de courant (10), chaque module de prise de courant (10) comprenant

- un fond (1) ;
- deux parois latérales opposées (2) ;
- un moyen de fixation (3) faisant saillie depuis le fond et/ou les parois latérales et permettant le rattachement d'appareils électriques ; et
- des profilés d'engagement (4, 5) disposés sur les bords supérieurs des parois latérales permettant de fixer le boîtier d'installation aux rebords d'une moulure ou de toute autre ouverture d'installation de cadre de prise de courant,
- un premier moyen de couplage (11) présent sur une première extrémité et un second moyen de couplage (12) présent à une seconde extrémité du module de prise de courant (10), lequel

établit un verrouillage par complémentarité de forme avec le premier moyen de couplage (11) d'un autre modules de prise de courant (10), le boîtier d'installation prouvant se prolonger indéfiniment au moyen de modules de prise de courant (10), 5

caractérisé en ce que les extrémités des modules de prise de courant (10) sont munies de connecteurs (7, 8), incluant un élément de connecteur femelle (7) 10 et un élément de connecteur mâle (8) qui est compatible avec l'élément de connecteur semelle (7) présent à l'extrémité d'un module de prise de courant adjacent (10) permettant le raccord mécanique et électrique entre les connecteurs (7, 8) et **en ce que** 15 certains des connecteurs (7, 8) sont munis d'un moyen de couplage (12') permettant d'établir un verrouillage par complémentarité de forme avec ledit premier moyen de couplage (11) et certains des connecteurs (7, 8) sont munis d'un moyen de couplage 20 (11') permettant d'établir un verrouillage par complémentarité de forme avec ledit second moyen de couplage (12), moyennant quoi les modules de prise de courant (10) peuvent être couplés sélectivement soit directement, soit au moyen du raccord mécanique et électrique entre les connecteurs (7, 8) dans 25 le prolongement les uns des autres, et **en ce que** les connecteurs (7, 8) sont munis d'éléments de fixation (19) permettant le rattachement d'une plaque de couverture (22) masquant la zone occupée par 30 les connecteurs réciproquement raccordés (7, 8) .

2. Boîtier d'installation selon la revendication 1, **caractérisé en ce que** les connecteurs comportent un élément de connecteur femelle multipolaire (7) et un 35 élément de connecteur mâle multipolaire (8), ainsi que des montures (7a, 8a) sur lesquelles les éléments de connecteur (7, 8) peuvent être montés et qui peuvent être fixées aux extrémités du module de prise de courant (10). 40
3. Boîtier d'installation selon la revendication 2, **caractérisé en ce que** certaines (8a) montures (7a, 8a) sont munies d'un moyen de couplage (12') permettant d'établir un verrouillage par complémentarité de 45 forme avec un premier moyen de couplage (11) présent sur une extrémité du module de prise de courant (10), et certaines (7a) des montures (7a, 8a) sont munies d'un moyen de couplage (11') permettant d'établir un verrouillage complémentarité de forme 50 avec un second moyen de couplage (12) présent sur une seconde extrémité du module de prise de courant (10).
4. Boîtier d'installation selon la revendication 2 ou 3, 55 **caractérisé en ce que** les éléments de fixation (19) destinés à la plaque de couverture (22) sont inclus dans les montures (7a, 8a).

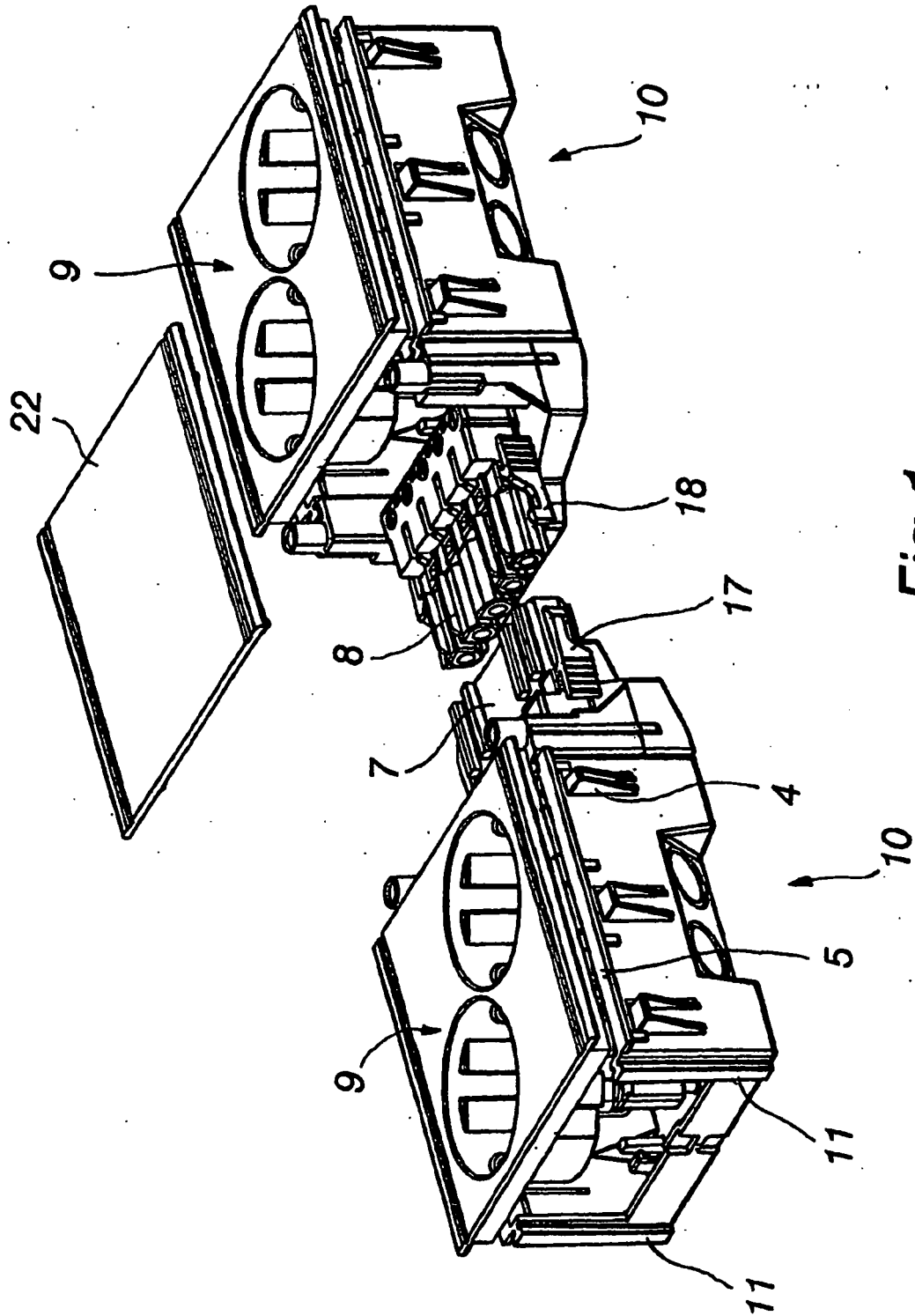


Fig.1

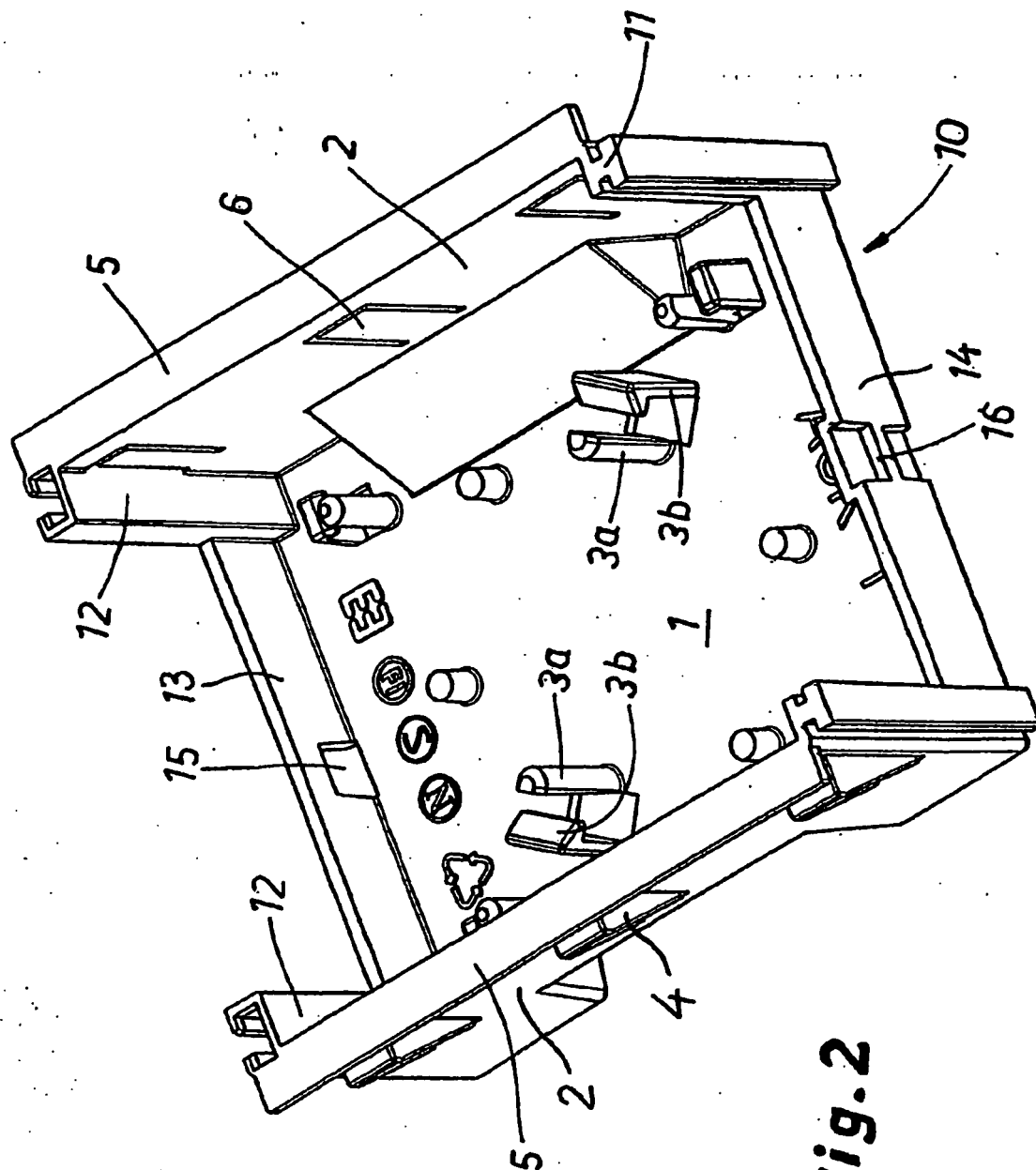


Fig. 2

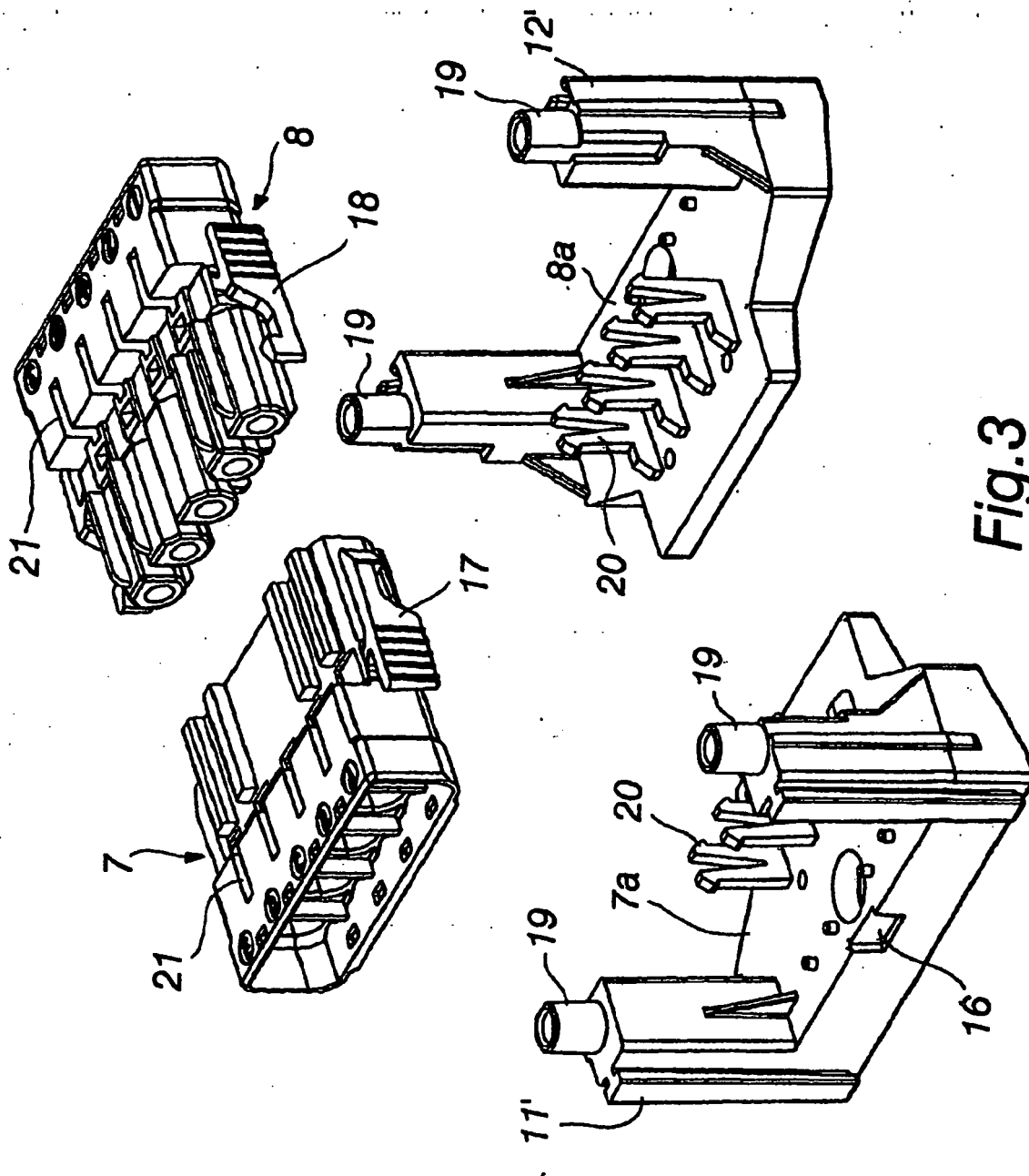


Fig.3

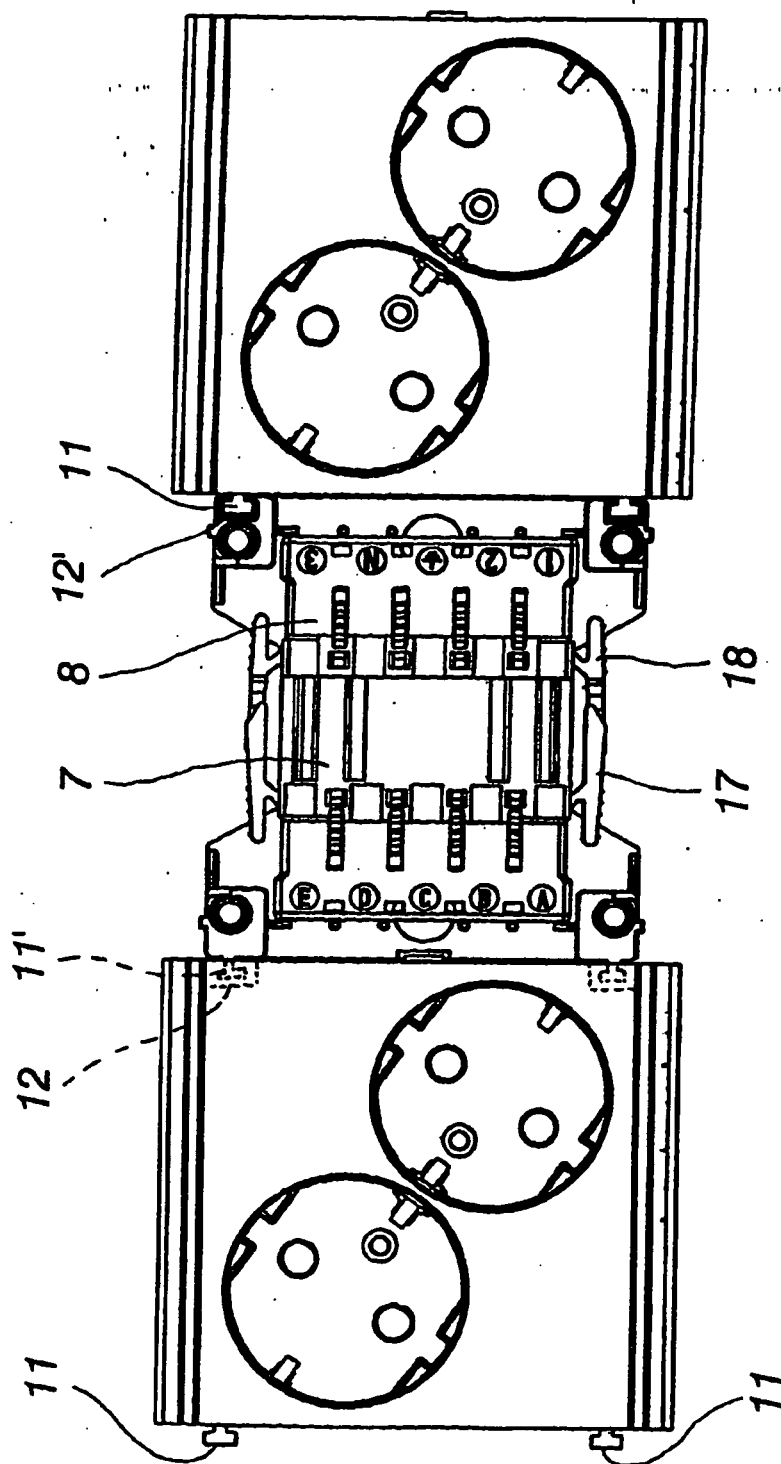


Fig. 4

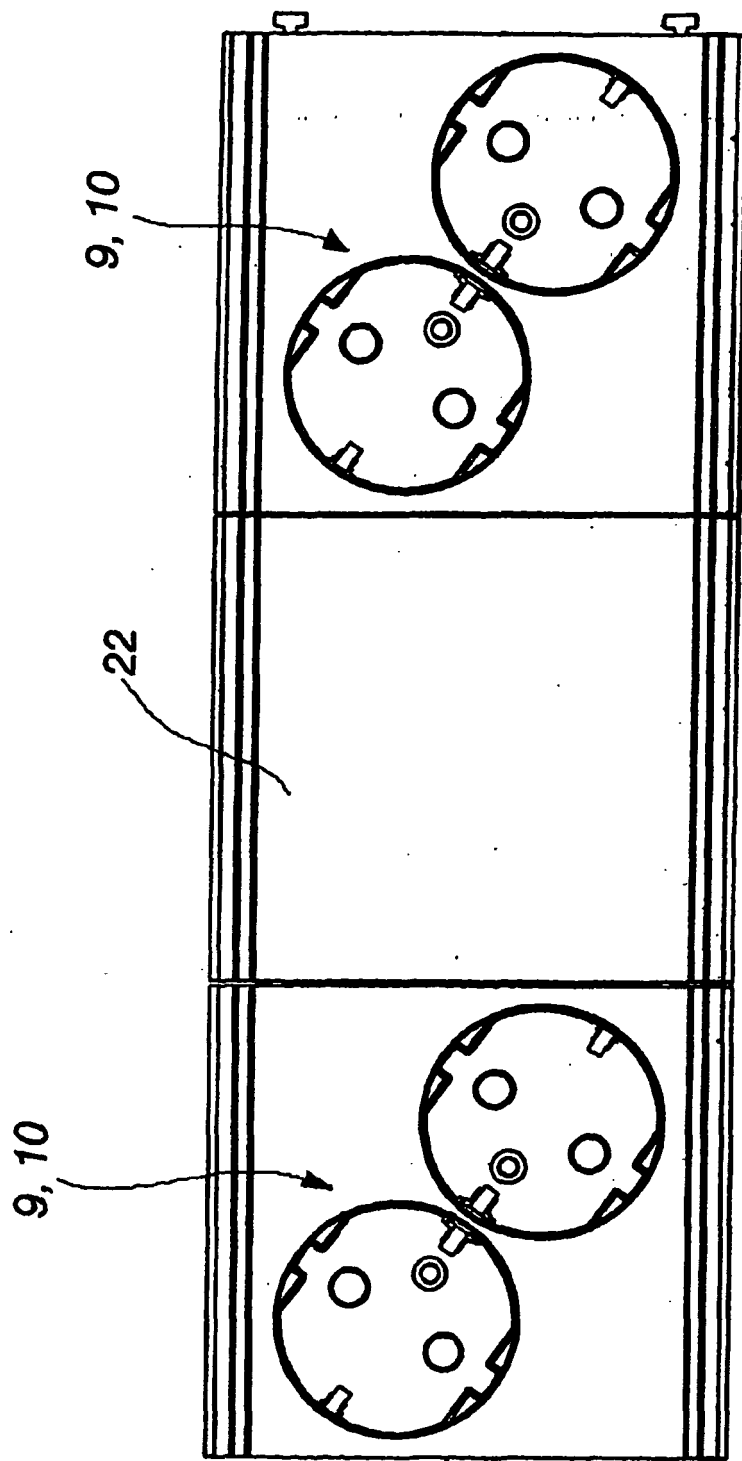


Fig.5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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