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(54) **Socket assembly**

(57) The invention relates to a socket assembly, comprising a socket frame (10), a socket-outlet along with its cover plate (9) fitted therein, connectors (7,8) present at the opposite ends of the socket assembly, which are compatible with connectors (8,7) present at

the end of an adjacent socket assembly or a cable and which have poles (L1,L2,L3) for three-phase linking. The connectors (7,8) present at the opposite ends of the socket assembly have their poles (L1,L2,L3) for three-phase linking precoupled with each other by rotating a position of the phases.

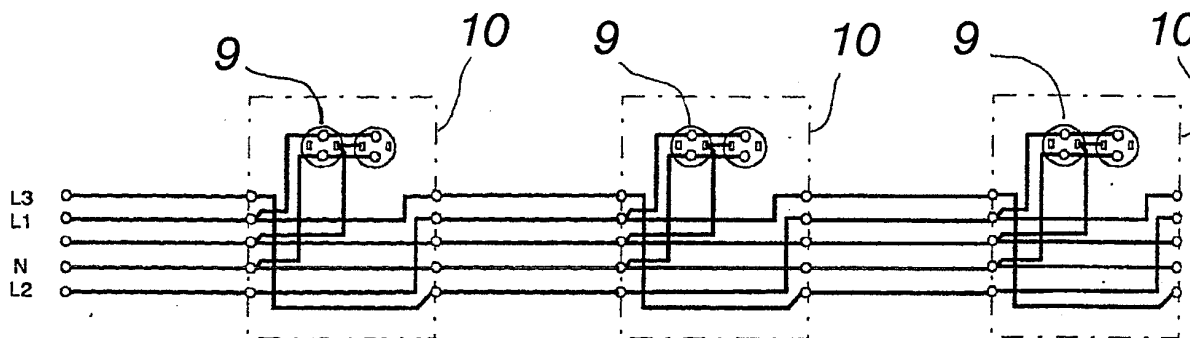


Fig.5

Description

[0001] The invention relates to a socket-outlet, comprising a socket frame, a socket-outlet along with its cover plate fitted therein, connectors present at the opposite ends of the socket-outlet, which are compatible with connectors present at the end of an adjacent socket-outlet or a cable and which have poles for three-phase linking.

[0002] The invention is based on the discovery that the creation of a line of three-phase, chained socket-outlet products shall result in an excessive number of products. On the other hand, it is quite obvious that single-phase versions are also necessary.

[0003] It is an object of the invention to provide a socket-outlet, whereby a comprehensive range of products can be created with as few products as possible.

[0004] The object is accomplished by the invention in such a way that the poles of connectors present at the opposite ends of a socket-outlet for three-phase linking are precoupled with each other by rotating the position of the phases. As the three phases are beforehand precoupled from one connector to another and the phase sequence is rotated, a number of benefits will be gained. Thus, just a single product needs to be manufactured, nor is it necessary for a designer to define phasings. The amount of work falls in all process steps: manufacturing, designing, retailing, contracting, alteration and maintenance tasks.

[0005] It is prior known to perform a phase rotation on installation site. This invention is different in the sense that the inter-connector phase rotation is precoupled as a ready-to-use product already in the plant.

[0006] The invention will now be described in more detail by way of an exemplary embodiment with reference to the accompanying drawings, 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 a the socket-outlet,

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 one example of a phase rotation implemented with a socket-outlet of the invention.

[0007] First described is a basic principle for the socket-outlet with reference to figs. 1 and 2. A 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.

[0008] 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.

[0009] 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.

[0010] 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.

[0011] 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.

[0012] 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 con-

nection must be readily disconnectable for the reuse and/or rearrangement of modules.

[0013] 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.

[0014] 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 (fig. 1) pressable securely onto fastening members 19 rising from the mountings 7a, 8a (in the present case, a mortise and tenon joint).

[0015] What is novel and special about the present invention is the design of connection between the connectors 7, 8 present at the opposite ends of each socket-outlet 9, 10. This is visualized in fig. 5. The 5-pole connectors 7 and 8 have three poles L1, L2, L3 for three-phase linking. The connectors 7, 8 present at the opposite ends of the socket-outlet 9, 10 have their poles L1, L2, L3 precoupled with each other by rotating a position of the phases. In the exemplary case of fig. 5, the phase rotation between the poles proceeds as follows: L1→L3, L2→L1, L3→L2. This can also be reversed: L3→L1, L1→L2, L2→L3.

[0016] 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 connectors 7 and 8 can also be permanently attached to the ends of the socket modules 10. However, a releasable attachment facilitates the fabrication of components and enables a more versatile application for the socket modules 10, such that the socket-outlets can be optionally coupled either directly or by way of

connectors as an extension of each other.

Claims

1. A socket-outlet, comprising a socket frame (10), a socket-outlet along with its cover plate (9) fitted therein, connectors (7, 8) present at the opposite ends of the socket-outlet (9, 10), which are compatible with connectors (8, 7) present at the end of an adjacent socket-outlet (9, 10) or a cable and which have poles L1, L2, L3) for three-phase linking, **characterized in that** the connectors (7, 8) present at the opposite ends of the socket-outlet (9, 10) have their poles (L1, L2, L3) for three-phase linking precoupled with each other by rotating a position of the phases.
2. A socket-outlet as set forth in claim 1, **characterized in that** 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, and said mountings (7a, 8a) being in turn attachable to the ends of the socket-outlet (9, 10).
3. A socket-outlet as set forth in claim 2, **characterized 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-outlet (9, 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 the other end of the socket-outlet (9, 10).

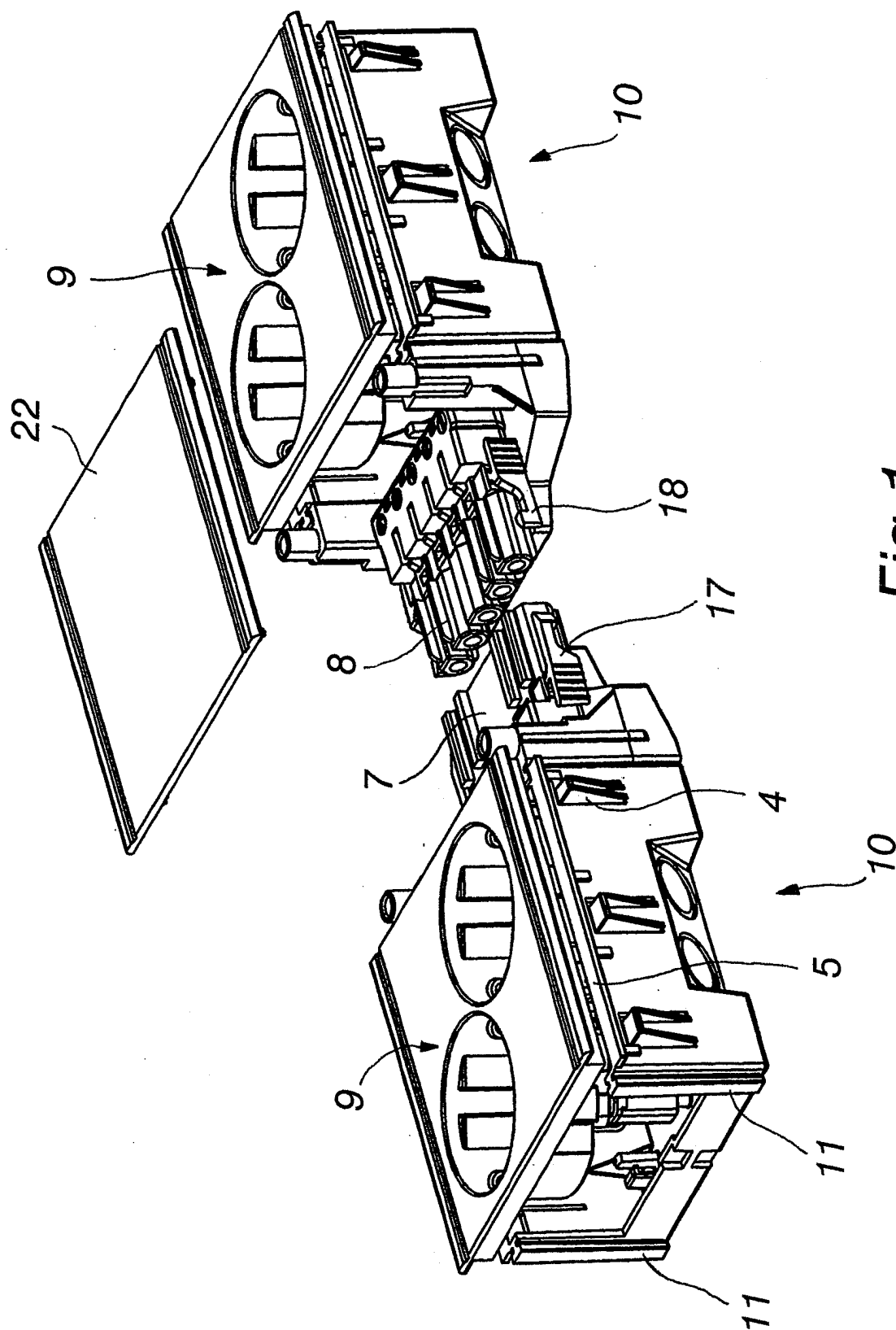


Fig.1

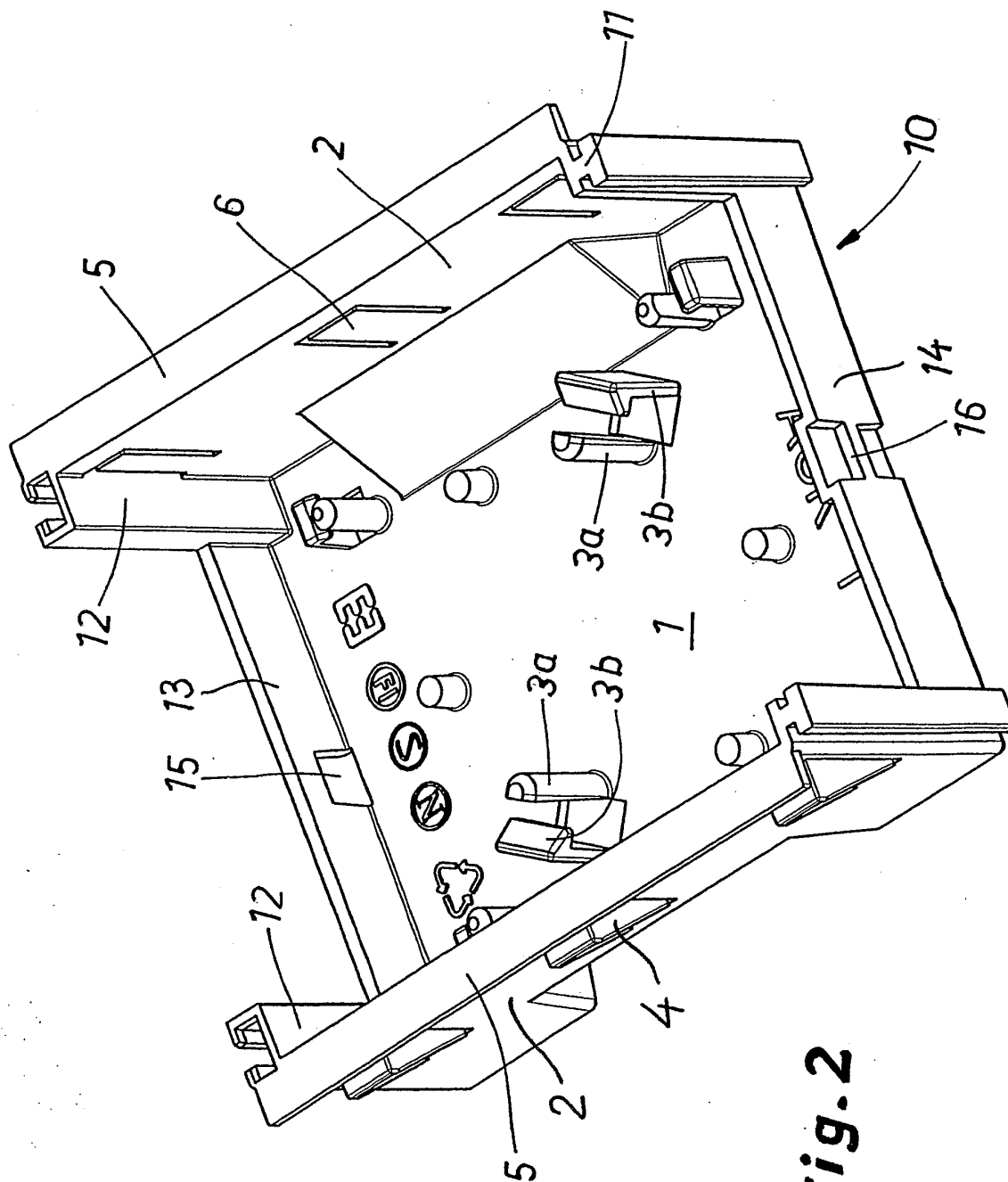


Fig. 2

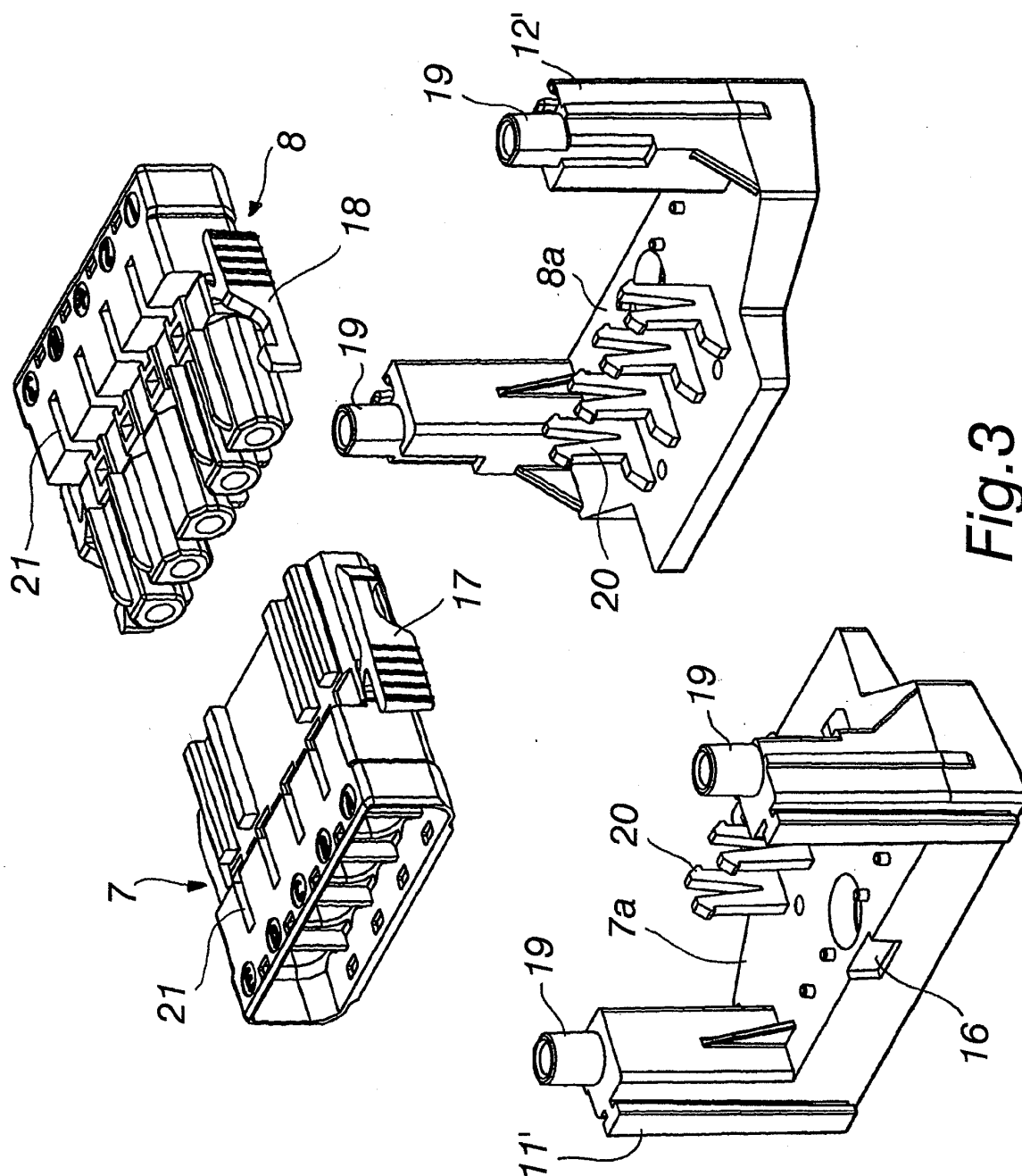


Fig. 3

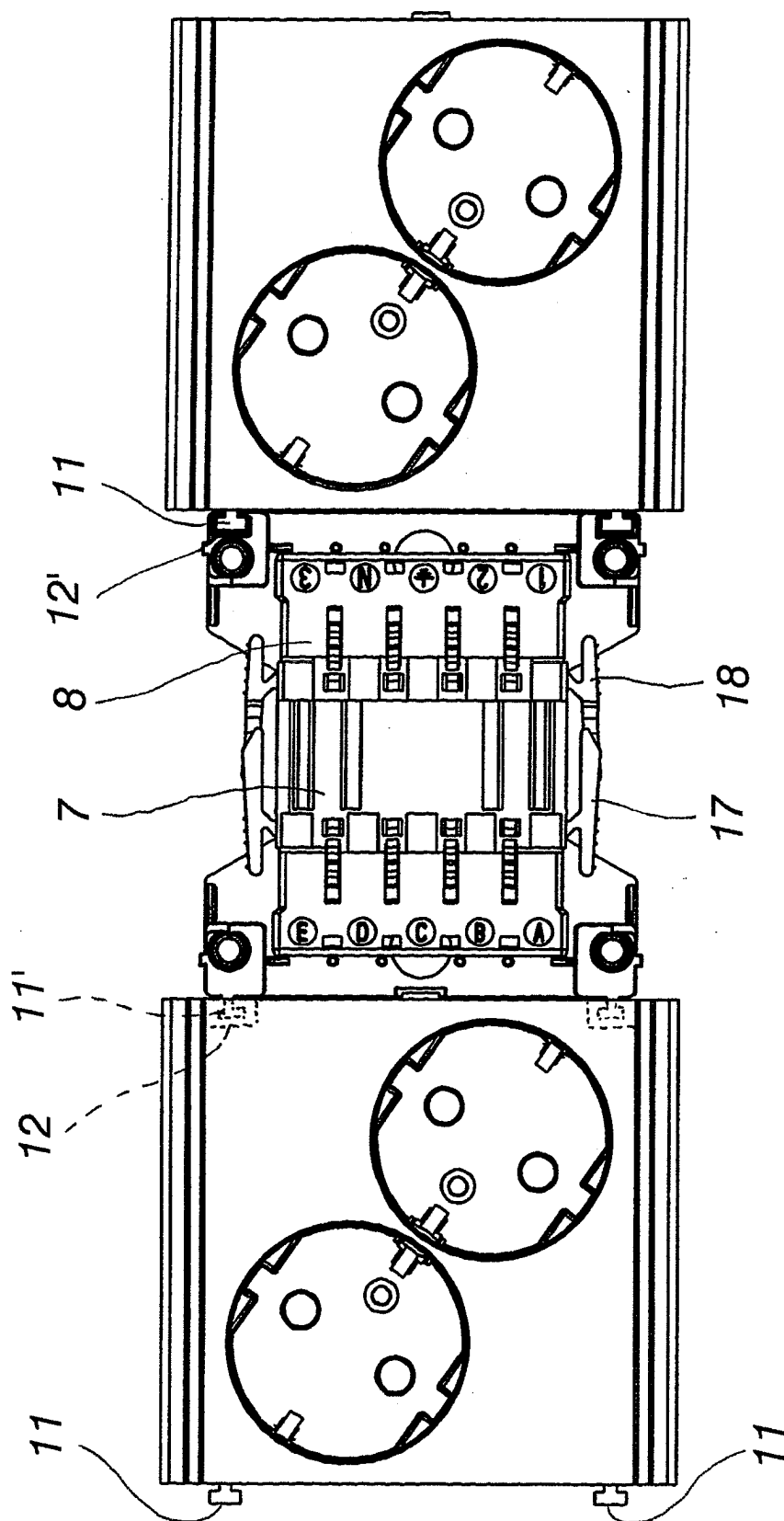


Fig. 4

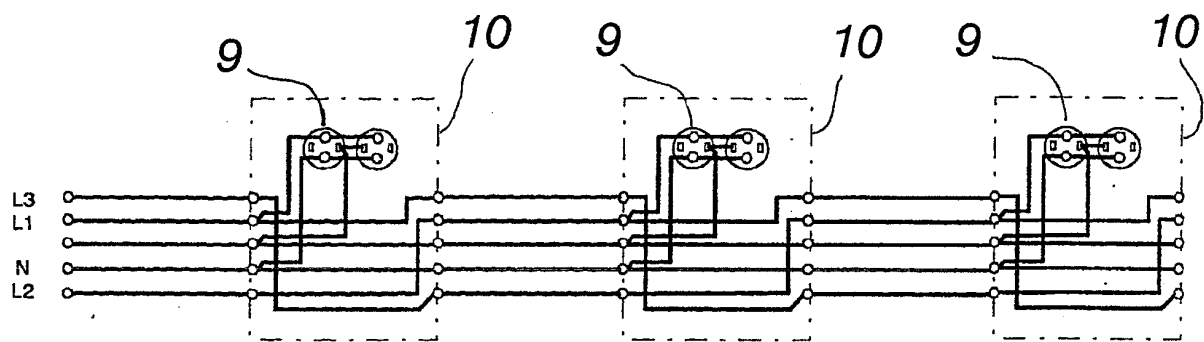


Fig.5



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EUROPEAN SEARCH REPORT

Application Number
EP 03 10 2346

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13 November 2003	Examiner Salojärvi, K
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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