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(54) INTEGRATED MULTI-DIMENSION PALLET

(57) Integrated multi-dimension pallet that allows the 6 dimensions specified by the International Organization for Standardization (ISO) in the ISO 6780:2003 standard to be configured in length and width, as well as other dimensions of common use or according to specific needs, without requiring the assembly of parts, the coupling of modular elements or other additional accessories.

It comprises 3 main components: core (N), lateral extension-retraction mechanisms (Ll; L2) and transverse extension-retraction mechanisms (Tl; T2) which operate integrally. To obtain a dimension, the lateral (Ll; L2) and transverse (Tl; T2) extension-retraction mechanisms need only to be adjusted to the desired length and width.

The minimum length and width configuration is 1,0 m X 0,8 m and the maximum is 1,219 m × 1,219 m, allowing entry from all 4 sides with a pallet truck or forklift, while maintaining the platform's stability and robustness to support loads and be moved.

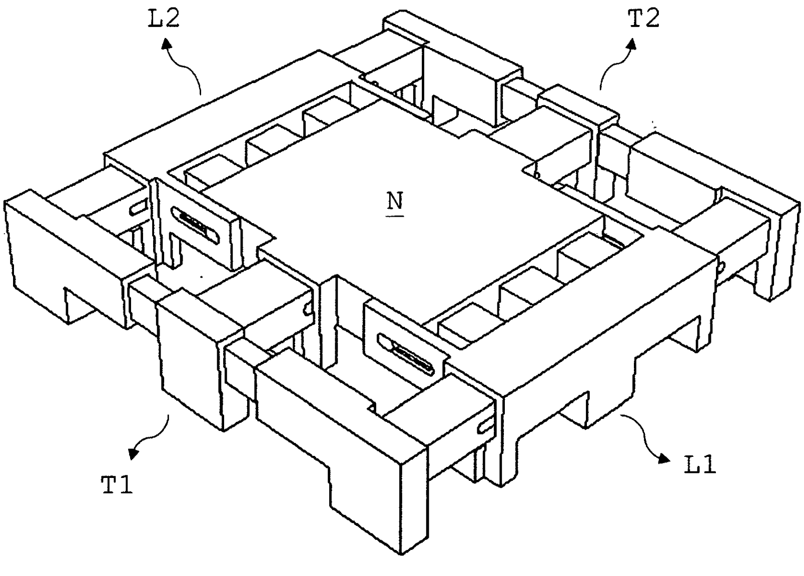


FIG. 4

Processed by Luminess, 75001 PARIS (FR)

Description

Technical field

[0001] This invention relates to an integrated multi-dimension pallet consisting of lateral extension-retraction mechanisms (L1; L2) and transverse extension-retraction mechanisms (T1; T2) which operate integrally from a central component, the core (N), and whose operation makes it possible to configure in length and width, not only the dimensions specified by ISO - International Organization for Standardization in standard ISO 6780: 2003, but also other dimensions of common use or according to specific needs, always maintaining the stability of the platform, the loading surface and the structural robustness to support the load and be moved, permanently allowing access from 4 sides with a pallet truck or forklift.

[0002] It is an integrated system that does not require the assembly of components, parts or the coupling of modular elements or other additional accessories. To obtain the desired length and width configuration it is only necessary to pull or push the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms.

[0003] In order to configure the length and width dimensions specified in ISO 6780:2003, the integrated multi-dimension pallet has minimum dimensions of 1,0 m X 0,8 m and maximum dimensions of 1,219 m X 1,219 m.

[0004] The basic definition of minimum length and width dimensions other than 1,0 m X 0,8 m will also determine other maximum length and width configuration limits to be achieved by the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms through the same integrated operation, the same constituent components and their characteristics.

[0005] The height of the feet is 0,10 m and the overall height is 0,23 m.

[0006] In this document, references to "dimension" and "size" are to be understood as length and width configurations.

[0007] The lateral extension-retraction mechanisms (L1; L2) are equal to each other and have the same characteristics, functions and mode of operation/use, making up 1 component.

[0008] The transverse extension-retraction mechanisms (T1; T2) are equal to each other and have the same characteristics, functions and mode of operation/use, making up 1 component.

[0009] Due to its characteristics and mode of operation, the integrated multi-dimension pallet can be made of materials such as polyethylene, combined with metal applications or reinforcements, depending on specificities or sectors of activity for which it is intended.

Background art

[0010] Pallets are loading platforms for transporting and storing products and goods of various kinds.

[0011] With the advent of containerization, pallets have become a fundamental and inseparable element in the process of transporting goods on a global scale: international trade in goods by volume is mostly done by sea (80% to 90%) and of this, around 17% is containerized cargo.

[0012] However, there are many different pallet sizes around the world, which increases transportation costs and logistical inefficiencies. Given the difficulty in defining a universal dimension, especially in terms of length and width, ISO has specified 6 dimensions through the ISO 6780:2003 standard:

- 1,2 m × 0,8 m (mainly used in Europe);
- 1,016 m × 1,219 m (most widely used in the United States of America);
- 1,067 m × 1,067 m (used in the USA, Europe and Asia);
- 1,0 m × 1,2 m (mainly used in Europe and Asia);
- 1,1 m × 1,1 m (mostly used in Asia);
- 1,165 m × 1,165 m (mainly used in Australia).

[0013] In addition to these standardized dimensions, there are others that are commonly used. For example, in the USA, apart from the length and width dimensions covered by the ISO 6780:2003 standard, there are at least 9 other dimensions that are used, and in Europe another 6.

[0014] Furthermore, the majority of pallets in use around the world, whether made of wood, plastic or other materials (or a combination of materials), are fixed size platforms and cannot be configured in other length and width dimensions. This effectively restricts logistics, both in terms of storage and transportation, and in terms of adapting the pallet dimensions to the load, resulting in additional costs.

[0015] Nevertheless, there are currently several patents on pallets that allow their dimensions to be modified.

[0016] For example, JP2016060544 relates to a pallet formed by various parts and elements which, when assembled, allow different dimensions to be obtained. The use of this pallet, therefore, requires the assembly of these various elements whenever it is necessary to obtain a new length and width. In a logistical context, and despite the fact that it allows for different dimensions, it is not practical in terms of its use, since each pallet, or at least each new need to change dimensions, requires the assembly of a pallet using a plurality of parts, making it a logistical sub-process of pallet assembly.

[0017] US10815028 describes a pallet made of modular elements which, when coupled together, allow the dimensions of the pallet to be modified (increased or decreased) in proportion to the size of these elements. However, the process of obtaining a new dimension involves not only the connection of several modular elements, but also the use of other parts such as screws/-bolts. The modular elements are further connected by reinforcing pieces which also act as the feet or base of the platform. The drawings in this patent show that the shape of these feet only allows pallet trucks or forklifts to enter from 2 sides. In fact, once a certain number of modular elements have been fitted, the arrangement of the parts used to reinforce the platform and at the same time to operate as feet does not allow any pallet lifting equipment to enter from either side.

[0018] KR20210025147 also corresponds to a modular pallet. This pallet requires the modular elements to be assembled and does not involve the use of other additional parts. However, it only allows its size to be increased or decreased in one direction and always in proportion to the size of these modular elements, which is a limitation in terms of flexibility in adapting the pallet's dimensions to the load or logistical requirements.

[0019] CN112777085 refers to a pallet intended for transporting photovoltaic panels, which can be modified in length and width by means of a system of slides or sliding rails. Its construction does not allow access with a pallet truck or forklift from all 4 sides, but only from 2, as the runner system on the sides forms the base for the pallet to come into contact with the ground. Its way of functioning also implies that the useful surface for supporting or placing loads corresponds to the width of the pallet runners, which leaves a considerable gap without support points for placing loads. Moreover, when extended, the pallet does not have a central support point, which compromises the pallet's robustness and versatility.

[0020] DE202019003041 also mentions the possibility of adjusting its length and width. On the basis of the available documentation and analysis of the only published figure, it seems that the length and width modifications are carried out using a pantographic system. The published figure shows a pallet on which a system of sliding rails also appears to be used to allow the lateral dimension modification movements to continue, with these sliding rails forming the base of contact between the pallet and the ground, thus placing limitations on lateral access by pallet trucks or forklifts.

[0021] RU2667233 is also based on a pantographic system that allows the dimensions of the pallet to be changed in length and width. This pallet cannot be accessed from all 4 sides by pallet trucks or forklifts, as the side pieces supporting the pantographic elements form a continuous surface. Changing the dimensions requires the manipulation of parts.

[0022] All these pallet patents, which exemplify the general background art, always have certain limitations in terms of ease of use and versatility in a logistical context:

- Either they only allow their dimensions to be modified in one direction;
- Or they require the assembly of additional parts and/or modules that are, or can be, multiples of the standard parts;
- Or they have limitations in terms of surface support points for load placement;
- Or have vulnerabilities in terms of the robustness of the structure in its size modifications to support the load and be moved;
- Or they do not allow an unrestricted access from 4 sides with a pallet truck or forklift.

Detailed description of the invention and the figures shown

[0023] The integrated multi-dimension pallet is a system that consists of 3 main components:

- core (N), shown in Fig. 1;
- lateral extension-retraction mechanisms (L1; L2), shown in Fig. 2;
- transverse extension-retraction mechanisms (T1; T2), shown in Fig. 3.

[0024] The core (N) is the central component of the integrated multi-dimension pallet, on the basis of which operate the lateral extension-retraction mechanisms (L1; L2) and the transverse extension-retraction mechanisms (T1; T2), which also work on the lateral extension-retraction mechanisms (L1; L2), making an integrated system.

[0025] The lateral extension-retraction mechanisms (L1; L2) are equal to each other and have the same characteristics, functions and mode of operation/use, making up 1 component.

[0026] The transverse extension-retraction mechanisms (T1; T2) are equal to each other and have the same characteristics, functions and mode of operation/use, making up 1 component.

[0027] These 3 main components have a set of characteristics, described in detail and identified in the drawings, which are listed below:

core (N)

- NL1; NL2 - lateral entry points;
- NT3; NT4 - transverse entry points;
- NF5; NF6 - external fixing elements;
- D1 - bottom grooves;
- D2 - top grooves;
- D3; D4 - lateral grooves;
- N1 - central foot;
- PN2; PN3 - transverse feet.

lateral extension-retraction mechanisms (L1; L2)

- B1; B2 - fitting arms
- S1; S2 - support bars;
- E1; E2 - support bar pins;
- DB5 - lateral grooves;
- F1; F2 - external fixing arms;
- CL - longitudinal cutout;
- R1 - bottom groove;
- R2 - top groove;

- LT1; LT2 - entry points;
- DL6 - bottom and top grooves;
- PL4; PL5 - central feet;
- PL6; PL7; PL8; PL9 - lateral feet.

transverse extension-retraction mechanisms (T1; T2)

- BC1; BC2 - central fitting arms
- EL1; EL2 - longitudinal beams of the central fitting arms;
- HA1; BA2 - biaxial arms;
- PL1; PL2 - entry points of the biaxial arms;
- CLC - longitudinal cutout of the central fitting arms;
- CLB - longitudinal cutout of the biaxial arms;
- ST1; ST2 - support bars;
- E3 - support bar pins;
- EC1; EC2 - extension control pins;
- PT10; PT11 - central feet;
- PT12; PT13; PT14; PT15 - lateral feet.

[0028] The lateral extension-retraction mechanisms (L1; L2) and the transverse extension-retraction mechanisms (T1; T2) work in an integrated manner with the core (N), not being required the assembly of these 3 components or the coupling of additional parts, modular elements or other accessories for their use. To achieve the intended length and width configuration, it is only necessary to pull or push the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms. The length and width settings are made independently, i.e. the length is not a function of the width and vice versa, so there is total flexibility in setting the desired dimension.

Description of general operation

[0029] The integrated multi-dimension pallet allows the 6 dimensions specified by the International Organization for Standardization (ISO) in standard ISO 6780:2003 to be configured in length and width (which are used in Europe, the United States, Asia and Australia), as well as other dimensions of common use or according to specific needs, up to the limit of its minimum and maximum dimensions.

[0030] In order to configure these 6 dimensions, the integrated multi-dimension pallet has minimum dimensions of 1,0 m X 0,8 m and maximum dimensions of 1,219 m X 1,219 m. The height of the feet is 0,10 m and the total height is 0,23 m.

[0031] Its design makes it possible to enter from all 4 sides with a pallet truck or forklift, without any limitations, i.e. without elements joining the feet near the ground.

[0032] In Fig. 4 is shown the integrated multi-dimension pallet is in its maximum dimensions (1,219 m X 1,219 m) with the lateral extension-retraction mechanisms (L1; L2) fully extended from the core (N) and the transverse extension-retraction mechanisms (T1; T2) also fully extended from the core (N) and from the lateral extension-retraction mechanisms (L1; L2).

[0033] Fig. 5 shows the integrated multi-dimension pallet in its minimum dimensions (1,0 m X 0,8 m) with the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms fully retracted.

[0034] In Fig. 6 is shown the integrated multi-dimension pallet in a 1,2 m X 0,8 m configuration, which corresponds to the most commonly used pallet size in Europe. In this configuration, the transverse extension-retraction mechanisms (T1; T2) are fully retracted in relation to the core (N) and to the lateral extension-retraction mechanisms (L1; L2) (corresponding to a width of 0,8 m), while the lateral extension-retraction mechanisms (L1; L2) are extended in order to obtain a length of 1,2 m.

[0035] In Fig. 7 is illustrated the integrated multi-dimension pallet in a 1,219 m X 1,016 m configuration, corresponding to one of the most commonly used dimensions in the USA. In this length and width configuration, the lateral extension-retraction mechanisms (L1; L2) are fully extended (1,219 m), while the transverse extension-retraction mechanisms (T1; T2) are extended to 1,016 m.

[0036] Fig. 8 shows the integrated multi-dimension pallet in a 1,1 m × 1,1 m configuration, corresponding to one of the most commonly used dimensions in Asia. In this length and width configuration, the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms are extended to define these dimensions.

[0037] Fig. 9 shows the integrated multi-dimension pallet in a 1,165 m X 1,165 m configuration, corresponding to one of the most commonly used dimensions in Australia. In this length and width configuration, the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms are extended to define these dimensions.

[0038] These figures illustrate a set of dimensions that correspond to some length and width configurations that are more widely used and are intended to show the general way in which the integrated multi-dimension pallet operates. In this precise sense, all the length and width configurations between the minimum (1,0 m X 0,8 m) and maximum (1,219 m X 1,219 m) dimensions are possible through the integrated functioning of the lateral extension-retraction mechanisms (L1; L2) which operate on the core (N) and of the transverse extension-retraction mechanisms (T1; T2) that operate both on the core (N) and on the lateral extension-retraction mechanisms (L1; L2), making an integrated system which only requires that the aforementioned lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms to be pulled or pushed in order to obtain the desired length and width configuration.

[0039] The basic definition of minimum length and width dimensions other than 1,0 m X 0,8 m will also determine other maximum length and width configuration limits to be achieved by the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms through the same integrated operating process, the same constituent components of the integrated multi-dimension pallet and its characteristics.

Detailed description of the core (N)

[0040] The core (N) is the central component of the integrated multi-dimension pallet, on the basis of which the lateral extension-retraction mechanisms (L1; L2) and the transverse extension-retraction mechanisms (T1; T2) work in an integrated manner.

[0041] Fig. 10 is a view of the core (N) illustrating the lateral entry points (NL1) for the operation of the fitting arms (B1) of the lateral extension-retraction mechanism (L1), the transverse entry point (NT3) for the operation of the central fitting arm (BC1) of the transverse extension-retraction mechanism (T1) and the external fixing elements (NF5), which incorporate a protrusion at the bottom and top, where the external fixing arms (F1; F2) of the lateral extension-retraction mechanisms (L1; L2) work. The side opposite to (NL1), identified as (NL2), has the same characteristics as (NL1), enabling the fitting arms (B2) of the lateral extension-retraction mechanism (L2) to function. The side opposite to (NT3) and (NF5), identified as (NT4) and (NF6), has the same characteristics as (NT3) and (NF5), allowing both the central fitting arm (BC2) of the transverse extension-retraction mechanism (T2) and the external fixing arms (F1; F2) of the lateral extension-retraction mechanisms (L1; L2) to work.

[0042] Figs. 11 and 12 are perspectives of the core (N) where the lateral entry points (NL1) are shown in greater detail, with bottom (D1) and top (D2) grooves inside, where the pins (E1) of the support bars (S1) that work on the fitting arms (B1) of the lateral extension-retraction mechanism (L1) operate. The side opposite to (NL1) corresponds to (NL2) and has the same characteristics, allowing the pins (E1) of the support bars (S2) that work on the fitting arms (B2) of the lateral extension-retraction mechanism (L2) to operate.

[0043] Figs. 13 and 14 are views of the core (N) where the transverse entry point (NT3) is shown in more detail, with lateral grooves (D3; D4) inside for the operation of the extension control pin (EC1) of the support bar (ST1), which works on the central fitting arm (BC1) of the transverse extension-retraction mechanism (T1). In Figs. 13 and 14 are also shown the external fixing elements (NF5) which incorporate a protrusion at the bottom and top to guide the movement of the external fixing arms (F1; F2) of the lateral extension-retraction mechanisms (L1; L2) that act on them. The side opposite to (NT3) and (NF5) corresponds to (NT4) and (NF6) and has the same characteristics, allowing both the operation of the extension control pin (EC1) of the support bar (ST1) which operates on the central fitting arm (BC2) of the extension-retraction mechanism (T2) and the operation of the external fixing arms (F1; F2) of the lateral extension-retraction mechanisms (L1; L2).

[0044] Fig. 15 is a perspective of the core (N) showing in greater detail the central foot (PN1) and the transverse feet (PN2; PN3) located at the ends of the transverse entry points (NT3; NT4). The transverse feet (PN2; PN3) are characterised by a protrusion designed to provide greater stability and support area on the ground, fitting into the cutouts of the central feet (PT10; PT11) of the transverse extension-retraction mechanisms (T1; T2) when these are fully retracted.

Detailed description of the lateral extension-retraction mechanisms (L1; L2)

[0045] The lateral extension-retraction mechanisms (L1; L2), shown in fig. 2, work in an integrated manner with the core (N), at the lateral entry points (NL1; NL2) and at the external fixing elements (NF5; NF6) of the core (N) as illustrated, for example, in fig. 10.

[0046] The lateral extension-retraction mechanisms (L1; L2) are equal to each other, having the same characteristics, functions and mode of operation/use, making up 1 component.

[0047] Figs. 16 and 17 show the lateral extension-retraction mechanisms (L1; L2), which comprise the fitting arms (B1; B2) and their respective support bars (S1; S2) acting together on the lateral entry points (NL1; NL2) of the core (N), the external fixing arms (F1; F2) acting on the external fixing elements (NF5; NF6) of the core (N) and the entry points (LT1; LT2)) for the operation of the biaxial arms (BA1; BA2) of the transverse extension-retraction mechanisms (T1; T2) .

[0048] In Fig. 16 the support bars (S1; S2) are at their maximum amplitude, whereas in Fig. 17 they are fully retracted. The support bars (S1; S2) have the same length as the fitting arms (B1; B2) and when they are at their maximum amplitude they represent an increase in the reach of the fitting arms (B1; B2) of approximately 22%.

[0049] Figs 18 and 19 are a detailed view of the support bars (S1; S2) characterised both by the pins (E1) located at a raised end which work on the bottom (D1) and top (D2) grooves of the core (N) as shown in Figs. 11 and 12, and also by the pins (E2) acting on the lateral grooves (DB5) of the fitting arms (B1; B2) as shown in Figs. 20 and 21. Figs. 20 and 21 also show the vertical cutout of the fitting arms (B1; B2) into which the raised ends of the support bars (S1; S2) fit when fully retracted, as shown in Figure 17.

[0050] The operation of the pins (E1; E2) of the support bars (S1; S2) on the bottom (D1) and top (D2) grooves of the core (N) and on the lateral grooves (DB5) of the fitting arms (B1; B2) determines the maximum and minimum amplitude of the extension and retraction movement of the support bars (S1; S2) and the corresponding increase in the reach of the fitting arms (B1; B2), re-centring the support point of the fitting arms (B1; B2) in relation to the core (N).

[0051] Figs. 22 and 23 are a detailed view of the lateral extension-retraction mechanism (L1), showing both the longitudinal cutout (CL) of the external fixing arms (F1) that act specifically on the external fixing elements (NF5; NF6) of the core (N), and the bottom and top grooves (DL6) located at the entry point (LT1) where the biaxial arms (BA1; BA2) of the transverse extension-retraction mechanisms (T1; T2) work.

[0052] Figs. 24 and 25 are a detailed view of the longitudinal cutout (CL) of the external fixing arm (F1) of the lateral extension-retraction mechanism (L1), with bottom (R1) and top (R2) grooves where the bottom and top protrusions of the external fixing elements (NF5; NF6) act to keep the movement of the external fixing arms (F1) on the external fixing elements (NF5; NF6) in line. The external fixing arms (F1) also act as load-bearing point.

[0053] All the characteristics above mentioned related with Figs. 22, 23, 24 and 25 apply to the lateral extension-retraction mechanism (L2) and therefore to the external fitting arms (F2).

[0054] The combined action of the fitting arms (B1; B2) and its support bars (S1; S2) at the lateral entry points (NL1; NL2) of the core (N) and of the external fixing arms (F1; F2) at the external fixing elements (NF5; NF6) of the core (N) determine the maximum and minimum stroke amplitude of the extension and retraction movement of the lateral extension-retraction mechanisms (L1; L2), providing greater stability and robustness.

[0055] Fig. 26 is a view of the lateral extension-retraction mechanisms (L1; L2) that shows in more detail the central feet (PL4; PL5) and the lateral feet (PL6; PL7; PL8 and PL9) which are located at the ends of this component and are align with the core (N) feet (PN1; PN2; PN3), shown in Fig. 15. The lateral feet (PL6; PL7; PL8 and PL9) are characterized by a protrusion designed to provide greater stability and support area on the ground, fitting into the cutouts of the lateral feet (PT12; PT13; PT14 and PT15) which are part of the biaxial arms (BA1; BA2) of the transverse extension-retraction mechanisms (T1; T2).

[0056] In Fig. 27 is illustrated the integration of the lateral extension-retraction mechanisms (L1; L2) with the core (N) in a fully extended configuration. Also shown are the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2) and the transverse entry points (NT3; NT4) of the core (N) for the operation of the transverse extension-retraction mechanisms (T1; T2).

[0057] Fig. 28 shows the integration of the lateral extension-retraction mechanisms (L1; L2) with the core (N), in a maximum retraction configuration.

Detailed description of the transverse extension-retraction mechanisms (T1; T2)

[0058] The transverse extension-retraction mechanisms (T1; T2), shown in Fig. 3, work in an integrated way with the core (N) and with the lateral extension-retraction mechanisms (L1; L2), via the transverse entry points (NT3; NT4) of the core (N) and the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2), shown together in Figs. 27 and 28.

[0059] The transverse extension-retraction mechanisms (T1; T2) are equal to each other, having the same characteristics, functions and mode of operation/use, making up 1 component.

[0060] As shown in Fig. 29, the transverse extension-retraction mechanisms (T1; T2) are characterized by central fitting arms (BC1; BC2), support bars (ST1) and longitudinal beams (EL1; EL2), and also by biaxial arms (BA1; BA2) and its support bars (ST2).

[0061] The central fitting arms (BC1; BC2) work on the transverse entry points (NT3; NT4) of the core (N), while the biaxial arms (BA1; BA2) work simultaneously on the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2) and on the longitudinal beams (EL1; EL2). In Fig. 29, the biaxial arms (BA1; BA2) are extended in relation to the longitudinal beams (EL1; EL2), while in figure 30, the biaxial arms (BA1; BA2) are completely retracted in relation to the longitudinal beams (EL1; EL2) of the central fitting arms (BC1; BC2).

[0062] This movement of extension and retraction of the biaxial arms (BA1; BA2) on the longitudinal beams (EL1; EL2) of the central fitting arms (BC1; BC2) and its respective amplitude is determined by the action of the lateral extension-retraction mechanisms (L1; L2) on the core (N).

[0063] In Figs. 29 and 30 the support bars (ST1; ST2) are at their maximum extension, while in Fig. 31 they are fully retracted. The support bars (ST1; ST2) have the same length as the central fitting arms (BC1; BC2) and as the biaxial arms (BA1; BA2) on which they act, and when they are at their maximum extension they represent an increase in the reach of the central fitting arms (BC1; BC2) and biaxial arms (BA1; BA2) of approximately 27%.

[0064] Fig. 32 is a detailed view of the support bars (ST1; ST2). The support bars (ST1) of the central fitting arms (BC1; BC2) are characterized by extension control pins (EC1) acting simultaneously on the longitudinal cutout (CLC) of the central fitting arms (BC1; BC2), as shown for example in Fig. 33, and on the lateral grooves (D3; D4) of the core (N), as shown in Fig. 13 and 14. The support bars (ST1) are also characterized by raised ends. The support bars (ST2) of the biaxial arms (BA1; BA2) are characterized by extension control pins (EC2) which act on the longitudinal cutout (CLB) of the biaxial arms (BA1; BA2), as shown in figure 33, for example, and are also characterized by the pins (E3) located at the raised ends which act on the bottom and top grooves (DL6) of the lateral extension-retraction mechanisms (L1; L2), as shown in figures 22 and 23.

[0065] The operation of the pins (E3) of the support bars (ST2) in the bottom and top grooves (DL6) of the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2), combined with the action of the extension control pins (EC2) in the biaxial arms (BA1; BA2) and with the action of the extension control pins (EC1) of the support bars (ST1) in the central fitting arms (BC1; BC2) and in the lateral grooves (D3; D4) of the core (N) determine the maximum and minimum amplitude of the extension and retraction movement of the support bars (ST1; ST2) and the respective increase in reach of the central fitting arms (BC1; BC2) and biaxial arms (BA1; BA2), re-centring the support point of the central fitting arms (BC1; BC2) and of the biaxial arms (BA1; BA2) in relation to the core (N) and to the lateral extension-retraction mechanisms (L1; L2).

[0066] The joint action of the central fitting arms (BC1; BC2) and its support bars (ST1) at the transverse entry points (NT3; NT4) of the core (N) with the biaxial arms (BA1; BA2) and its support bars (ST2) at the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2) determines the maximum and minimum stroke amplitude of the extension and retraction movement of the transverse extension-retraction mechanisms (T1; T2) in relation to the core (N) and in relation to the lateral extension-retraction mechanisms (L1; L2), while the amplitude of the extension and retraction movement of the biaxial arms (BA1; BA2) on the longitudinal beams (EL1; EL2) of the central fitting arms (BC1; BC2) is determined by the action of the lateral extension-retraction mechanisms (L1; L2) on the core (N), which gives greater stability and robustness.

[0067] Fig. 34 is a detailed view of the transverse extension-retraction mechanism (T2), showing the integration of the support bars (ST1; ST2) with the central fitting arm (BC2) and with the biaxial arms (BA2) and the functioning of the extension control pins (EC1) which act on the longitudinal cutout (CLC) of the central fitting arm (BC2) and the extension control pins (EC2) which act on the longitudinal cutout (CLB) of the biaxial arms (BA2), shown in this figure in the middle of the extension-retraction movement. Fig. 34 also shows the alignment of the raised ends of the support bars (ST1; ST2) with the vertical cutouts of the central fitting arm (BC2) and the biaxial arms (BA2). These same features and functionalities apply to the transverse extension-retraction mechanism (T1).

[0068] Fig. 35 shows in detail the central fitting arms (BC1; BC2), highlighting the longitudinal cutouts (CLC) for the operation of the extension control pins (EC1) of the support bars (ST1), the vertical cutouts where the raised ends of the support bars (ST1) fit when they are fully retracted and the longitudinal beams (EL1; EL2) with internal cutouts where the biaxial arms (BA1; BA2) operate.

[0069] Fig. 36 is a detailed illustration of the biaxial arms (BA1; BA2), highlighting the longitudinal cutouts (CLB) for the operation of the extension control pins (EC2) of the support bars (ST2), the vertical cutouts where the raised ends of the support bars (ST2) fit when they are fully retracted and the entry points (PL1; PL2) that work on the longitudinal beams (EL1; EL2) of the central fitting arms (BC1; BC2).

[0070] Fig. 37 is a view of the transverse extension-retraction mechanisms (T1; T2) showing in detail the central feet (PT10; PT11) that integrates the central fitting arms (BC1; BC2) and the lateral feet (PT12; PT13; PT14 and PT15) that integrates the biaxial arms (BA1; BA2), providing alignment with the feet of the core (N) and with the feet of the lateral extension-retraction mechanisms (L1; L2) as shown in Figs. 38 and 39.

[0071] The central feet (PT10; PT11) and the lateral feet (PT12; PT13; PT14; PT15), as shown in Fig. 37, are also characterized by cutouts where the feet of the core (N) and the feet of the lateral extension-retraction mechanisms (L1; L2) fit.

[0072] Fig. 38 shows a view of the bottom of the integrated multi-dimension pallet, in its maximum dimensions (1,219 m X 1,219 m) with the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms fully extended from the core (N) and where the feet of the 3 components and their alignment is visible.

[0073] Fig. 39 illustrates the bottom of the integrated multi-dimension pallet in its minimum dimensions (1,0 m x 0,8 m) with the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms fully retracted in relation to the core (N). In this perspective, the central feet (PT10; PT11) and lateral feet (PT12; PT13; PT14 and PT15) of the transverse extension-retraction mechanisms (T1; T2) are shown to dovetail with the transverse feet (PN2; PN3) of the core (N) and with the lateral feet (PL6; PL7; PL8 and PL9) of the lateral extension-retraction mechanisms (L1; L2), respectively.

Advantages of the invention

[0074] The integrated multi-dimension pallet has several advantages over the current background art:

- The 1st advantage is that it is an integrated system that does not require the assembly of its 3 components or the coupling of parts, modular elements or other additional accessories. To obtain the desired dimension in terms of length and width, it is only necessary to pull or push the lateral (L1; L2) and transverse (T1; T2) extension-retraction mechanisms, which work in an integrated way with the core (N) ;

- The 2nd advantage is that it is possible to configure various length and width dimensions between the minimum and maximum limits, and not just in one direction;

- The 3rd advantage is that the length and width are configured independently, i.e. the length is not a function of the width and vice versa, allowing total flexibility in defining the desired dimension;

- The 4th advantage is that it is fully accessible from all 4 sides with a pallet truck or forklift, since there are no elements connecting the feet near the ground;

- The 5th advantage is that there are no limitations in terms of support points for placing loads in the different possible length and width configurations;

- The 6th advantage is that, due to its integrated operation, it is structurally robust enough to support the load and be moved in any size configuration.

[0075] The combination of all these advantages results in greater logistical flexibility, optimisation of storage space and cost avoidance, since 1 integrated multi-dimension pallet allows the configuration of 6 different pallets with standard dimensions, while at the same time making it possible to define other length and width configurations according to specific needs, within the minimum (1,0 m X 0,8 m) and maximum (1,219 m X 1,219 m) limits defined here, so that it is possible to configure the dimensions specified by the ISO 6780:2003 standard in length and width.

Claims

1. Integrated multi-dimension pallet that allows several dimensions to be configured independently in length and width, without requiring the assembly of parts, the coupling of modular elements or other additional accessories, with permanent access from 4 sides with a pallet truck or forklift, **characterized by** 3 main components:

1.1. core (N);
1.2. lateral extension-retraction mechanisms (L1; L2);
1.3. transverse extension-retraction mechanisms (T1; T2).

2. Integrated multi-dimension pallet according to claim 1 **characterized in that** the core (N) consists of:

2.1. lateral entry points (NL1; NL2) having bottom grooves (D1) and top grooves (D2);
2.2. transverse entry points (NT3; NT4) with lateral grooves (D3; D4);
2.3. external fixing elements (NF5; NF6) which incorporate a protrusion at the bottom and top;
2.4. central foot (PN1);
2.5. transverse feet (PN2; PN3) which have a lateral protrusion designed to provide greater stability and support area on the ground, located at the ends of the transverse entry points (NT3; NT4) and aligned with the central foot (PN1).

3. Integrated multi-dimension pallet according to claims 1 and 2 **characterized in that** the lateral extension-retraction mechanisms (L1; L2) are equal to each other making up 1 component formed by:

3.1. fitting arms (B1; B2) with vertical cutouts at the ends and lateral grooves (DB5);
3.2. support bars (S1; S2);
3.3. external fixing arms (F1; F2);
3.4. entry points (LT1; LT2) that have top and bottom grooves (DL6);
3.5. central feet (PL4; PL5) which are aligned with each other and with the central foot of the core (PN1);
3.6. lateral feet (PL6; PL7; PL8 and PL9) that include a lateral protrusion designed to provide greater stability and support area on the ground and that are aligned with each other and with the central feet (PL4; PL5), as well as with the transverse feet of the core (PN2 and PN3).

4. Integrated multi-dimension pallet according to claims 2 and 3 **characterised in that** the support bars (S1; S2) are incorporated into the fitting arms (B1; B2) and comprise the following properties:

4.1. have the same length as the fitting arms (B1; B2);
4.2. have a raised end that engages with the vertical cutout of the fitting arms (B1; B2);
4.3. pins (E1) that fit into the bottom grooves (D1) and top grooves (D2) of the lateral entry points (NL1; NL2) of the core (N);
4.4. pins (E2) that fit into the lateral grooves (DB5) of the fitting arms (B1; B2).

5. Integrated multi-dimension pallet according to claims 2, 3 and 4 **characterized in that** the maximum and minimum amplitude of the extension and retraction movement of the support bars (S1; S2) is determined by:

5.1. pins (E1; E2);
5.2. bottom grooves (D1) and top grooves (D2);
5.3. lateral grooves (DB5).

6. Integrated multi-dimension pallet according to claims 2 and 3 **characterized in that** the external fixing arms (F1; F2) have the following properties:

6.1. longitudinal cutout (CL) that fit into the external fixing elements (NF5; NF6) of the core (N);
6.2. bottom groove (R1) and top groove (R2);
6.3. have the same height as the core (N);
6.4. to be load-bearing points.

7. Integrated multi-dimension pallet according to claims 2, 3, 4, 5 and 6 **characterised in that** the maximum and minimum stroke amplitude of the extension and retraction movement of the lateral extension-retraction mechanisms (L1; L2) in relation to the core (N) is determined by:

7.1. fitting arms (B1; B2);
7.2. support bars (S1; S2);
7.3. external fixing arms (F1; F2).

8. Integrated multi-dimension pallet according to claims 1, 2 and 3 **characterized in that** the transverse extension-retraction mechanisms (T1; T2) are equal to each other making up 1 component formed by:

8.1. central fitting arms (BC1; BC2) incorporating longitudinal beams (EL1; EL2) with internal cutouts;
8.2. biaxial arms (BA1; BA2);
8.3. support bars (ST1; ST2);
8.4. central feet (PT10; PT11) which are part of the central fitting arms (BC1; BC2) and are aligned with each other and with the feet (PN1; PN2 and PN3) of the core (N), with cutouts where the transverse feet (PN2; PN3) of the core (N) fit;
8.5. lateral feet (PT12; PT13; PT14 and PT15) which are part of the biaxial arms (BA1; BA2) and are aligned with each other and with the central feet (PT10; PT11), as well as with the lateral feet (PL6; PL7; PL8 and PL9) of the lateral extension-retraction mechanisms (L1; L2), with cutouts where the lateral feet (PL6; PL7; PL8 and PL9) of the lateral extension-retraction mechanisms (L1; L2) fit.

9. Integrated multi-dimension pallet according to claim 8 **characterized in that** the central fitting arms (BC1; BC2) that incorporate longitudinal beams (EL1; EL2) comprise:

9.1. longitudinal cutout (CLC);
9.2. vertical cutout at the ends.

10. Integrated multi-dimension pallet according to claims 2, 8 and 9 **characterized in that** the support bars (ST1) are incorporated into the central fitting arms (BC1; BC2) and comprise the following properties:

10.1. have the same length as the central fitting arms (BC1; BC2);
10.2. have a raised end which fit into the vertical cutout of the central fitting arms (BC1; BC2);
10.3. extension control pins (EC1) which engage with the longitudinal cutout (CLC) of the central fitting arms (BC1; BC2) and with the lateral grooves (D3; D4) of the transverse entry points (NT3; NT4) of the core (N) .

11. Integrated multi-dimension pallet according to claims 2, 8, 9 and 10 **characterized in that** the maximum and minimum stroke amplitude of the extension and retraction movement of the support bars (ST1) is determined by:

11.1. extension control pins (EC1);
11.2. longitudinal cutout (CLC);
11.3. lateral grooves (D3; D4).

12. Integrated multi-dimension pallet according to claim 8 **characterized in that** the biaxial arms (BA1; BA2) comprise:

12.1. longitudinal cutout (CLB) and a vertical cutout at the ends;
12.2. entry points (PL1; PL2) which fit into the longitudinal beams (EL1; EL2) of the central fitting arms (BC1; BC2).

13. Integrated multi-dimension pallet according to claims 3, 8 and 12 **characterized in that** the support bars (ST2) are incorporated into the biaxial arms (BA1; BA2) and comprise the following properties:

13.1. extension control pins (EC2) which fit into the longitudinal cutout (CLB) of the biaxial arms (BA1; BA2);
13.2. have a raised end which fits into the vertical cutout of the biaxial arms (BA1; BA2);
13.3. have the same length as the biaxial arms (BA1; BA2);
13.4. pins (E3) which fit into the bottom and top grooves (DL6) of the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2) .

14. Integrated multi-dimension pallet according to claims 3, 8, 12 and 13 **characterized in that** the maximum and minimum stroke amplitude of the extension and retraction movement of the support bars (ST2) is determined by:

14.1. extension control pins (EC2);
14.2. longitudinal cutout (CLB);
14.3. pins (E3);
14.4. bottom and top grooves (DL6).

15. Integrated multi-dimension pallet according to claims 2, 3, 8, 9, 10, 11, 12, 13 and 14 **characterized in that** the maximum and minimum stroke amplitude of the extension-retraction movement of the transverse extension-retraction mechanisms (T1; T2) in relation to the core (N) and in relation to the lateral extension-retraction mechanisms (L1; L2) is determined by:

15.1. central fitting arms (BC1; BC2);
15.2. biaxial arms (BA1; BA2);
15.3. support bars (ST1; ST2).

Amended claims in accordance with Rule 137(2) EPC.

1. Integrated multi-dimension pallet comprising components that enables size customization and a central component, the core (N), which is **characterized by**:

1.1. lateral entry points (NL1; NL2) having bottom grooves (D1) and top grooves (D2);
1.2. transverse entry points (NT3; NT4) with lateral grooves (D3; D4);
1.3. external fixing elements (NF5; NF6) which incorporate a protrusion at the bottom and top;
1.4. central foot (PN1);
1.5. transverse feet (PN2; PN3) which have a lateral protrusion designed to provide greater stability and support area on the ground, located at the ends of the transverse entry points (NT3; NT4) and aligned with the central foot (PN1).

2. Integrated multi-dimension pallet according to claim 1 wherein the lateral extension-retraction mechanisms (L1; L2) that enables lateral size customization are equal to each other making up 1 component **characterized by**:

2.1. fitting arms (B1; B2) with vertical cutouts at the ends and lateral grooves (DB5);
2.2. support bars (S1; S2);
2.3. external fixing arms (F1; F2);
2.4. entry points (LT1; LT2) that have top and bottom grooves (DL6);
2.5. central feet (PL4; PL5) which are aligned with each other and with the central foot of the core (PN1);
2.6. lateral feet (PL6; PL7; PL8 and PL9) that include a lateral protrusion designed to provide greater stability and support area on the ground and that are aligned with each other and with the central feet (PL4; PL5), as well as with the transverse feet of the core (PN2 and PN3).

3. Integrated multi-dimension pallet according to claims 1 and 2 **characterised in that** the support bars (S1; S2) are incorporated into the fitting arms (B1; B2) and comprise the following properties:

3.1. have the same length as the fitting arms (B1; B2);
3.2. have a raised end that engages with the vertical cutout of the fitting arms (B1; B2);
3.3. pins (E1) that fit into the bottom grooves (D1) and top grooves (D2) of the lateral entry points (NL1; NL2) of the core (N);
3.4. pins (E2) that fit into the lateral grooves (DB5) of the fitting arms (B1; B2).

4. Integrated multi-dimension pallet according to claims 1, 2 and 3 **characterized in that** the maximum and minimum amplitude of the extension and retraction movement of the support bars (S1; S2) is determined by:

4.1. pins (E1; E2);
4.2. bottom grooves (D1) and top grooves (D2);
4.3. lateral grooves (DB5).

5. Integrated multi-dimension pallet according to claims 1 and 2 **characterized in that** the external fixing arms (F1; F2) have the following properties:

5.1. longitudinal cutout (CL) that fit into the external fixing elements (NF5; NF6) of the core (N);
5.2. bottom groove (R1) and top groove (R2);
5.3. have the same height as the core (N);
5.4. to be load-bearing points.

6. Integrated multi-dimension pallet according to claims 1, 2, 3, 4 and 5 **characterised in that** the maximum and minimum stroke amplitude of the extension and retraction movement of the lateral extension-retraction mechanisms (L1; L2) in relation to the core (N) is determined by:

6.1. fitting arms (B1; B2);
6.2. support bars (S1; S2);
6.3. external fixing arms (F1; F2).

7. Integrated multi-dimension pallet according to claims 1 and 2 wherein the transverse extension-retraction mechanisms (T1; T2) that enables transverse size customization are equal to each other making up 1 component **characterized by**:

7.1. central fitting arms (BC1; BC2) incorporating longitudinal beams (EL1; EL2) with internal cutouts;
7.2. biaxial arms (BA1; BA2);
7.3. support bars (ST1; ST2);
7.4. central feet (PT10; PT11) which are part of the central fitting arms (BC1; BC2) and are aligned with each other and with the feet (PN1; PN2 and PN3) of the core (N), with cutouts where the transverse feet (PN2; PN3) of the core (N) fit;
7.5. lateral feet (PT12; PT13; PT14 and PT15) which are part of the biaxial arms (BA1; BA2) and are aligned with each other and with the central feet (PT10; PT11), as well as with the lateral feet (PL6; PL7; PL8 and PL9) of the lateral extension-retraction mechanisms (L1; L2), with cutouts where the lateral feet (PL6; PL7; PL8 and PL9) of the lateral extension-retraction mechanisms (L1; L2) fit.

8. Integrated multi-dimension pallet according to claim 7 **characterized in that** the central fitting arms (BC1; BC2) that incorporate longitudinal beams (EL1; EL2) comprise:

8.1. longitudinal cutout (CLC);
8.2. vertical cutout at the ends.

9. Integrated multi-dimension pallet according to claims 1, 7 and 8 **characterized in that** the support bars (ST1) are incorporated into the central fitting arms (BC1; BC2) and comprise the following properties:

9.1. have the same length as the central fitting arms (BC1; BC2);
9.2. have a raised end which fit into the vertical cutout of the central fitting arms (BC1; BC2);
9.3. extension control pins (EC1) which engage with the longitudinal cutout (CLC) of the central fitting arms (BC1; BC2) and with the lateral grooves (D3; D4) of the transverse entry points (NT3; NT4) of the core (N) .

10. Integrated multi-dimension pallet according to claims 1, 7, 8 and 9 **characterized in that** the maximum and minimum stroke amplitude of the extension and retraction movement of the support bars (ST1) is determined by:

10.1. extension control pins (EC1);
10.2. longitudinal cutout (CLC);
10.3. lateral grooves (D3; D4).

11. Integrated multi-dimension pallet according to claim 7 **characterized in that** the biaxial arms (BA1; BA2) comprise:

11.1. longitudinal cutout (CLB) and a vertical cutout at the ends;
11.2. entry points (PL1; PL2) which fit into the longitudinal beams (EL1; EL2) of the central fitting arms (BC1; BC2).

12. Integrated multi-dimension pallet according to claims 2, 7 and 11 **characterized in that** the support bars (ST2) are incorporated into the biaxial arms (BA1; BA2) and comprise the following properties:

12.1. extension control pins (EC2) which fit into the longitudinal cutout (CLB) of the biaxial arms (BA1; BA2);
12.2. have a raised end which fits into the vertical cutout of the biaxial arms (BA1; BA2);
12.3. have the same length as the biaxial arms (BA1; BA2);
12.4. pins (E3) which fit into the bottom and top grooves (DL6) of the entry points (LT1; LT2) of the lateral extension-retraction mechanisms (L1; L2) .

13. Integrated multi-dimension pallet according to claims 2, 7, 11 and 12 **characterized in that** the maximum and minimum stroke amplitude of the extension and retraction movement of the support bars (ST2) is determined by:

13.1. extension control pins (EC2);
13.2. longitudinal cutout (CLB);
13.3. pins (E3);
13.4. bottom and top grooves (DL6).

14. Integrated multi-dimension pallet according to claims 1, 2, 7, 8, 9, 10, 11, 12 and 13 **characterized in that** the maximum and minimum stroke amplitude of the extension-retraction movement of the transverse extension-retraction mechanisms (T1; T2) in relation to the core (N) and in relation to the lateral extension-retraction mechanisms (L1; L2) is determined by:

14.1. central fitting arms (BC1; BC2);
14.2. biaxial arms (BA1; BA2);
14.3. support bars (ST1; ST2).

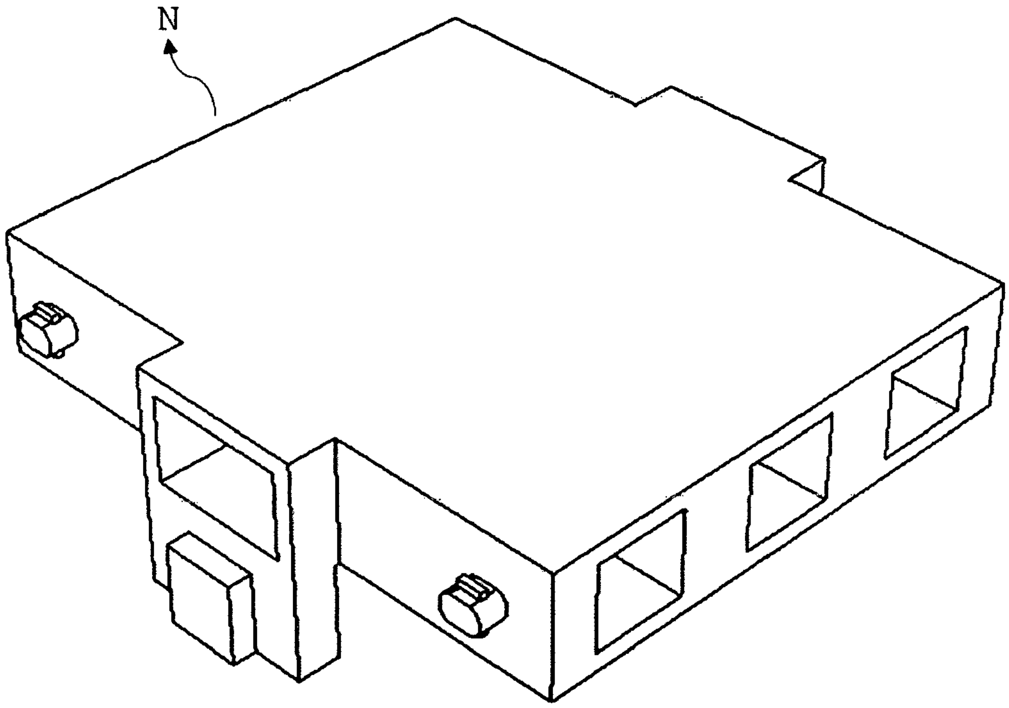


FIG. 1

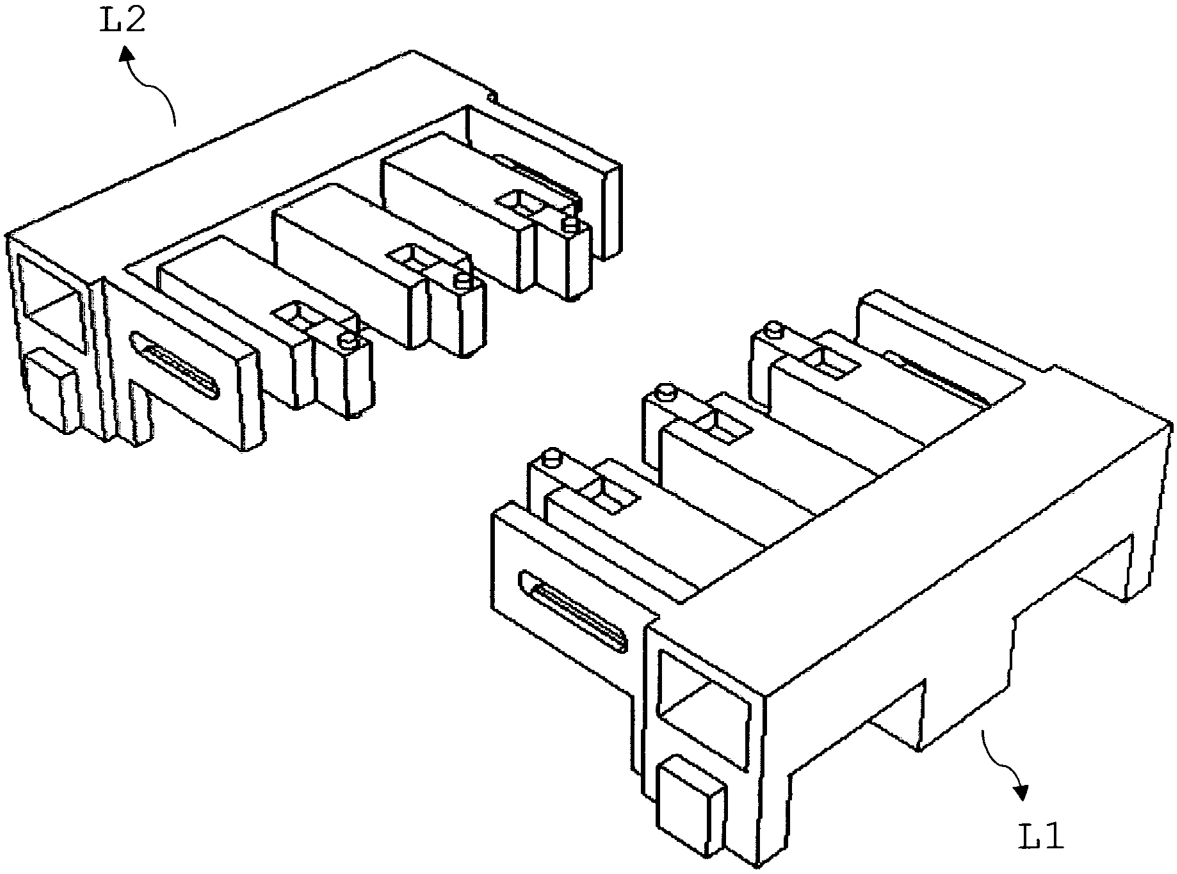


FIG. 2

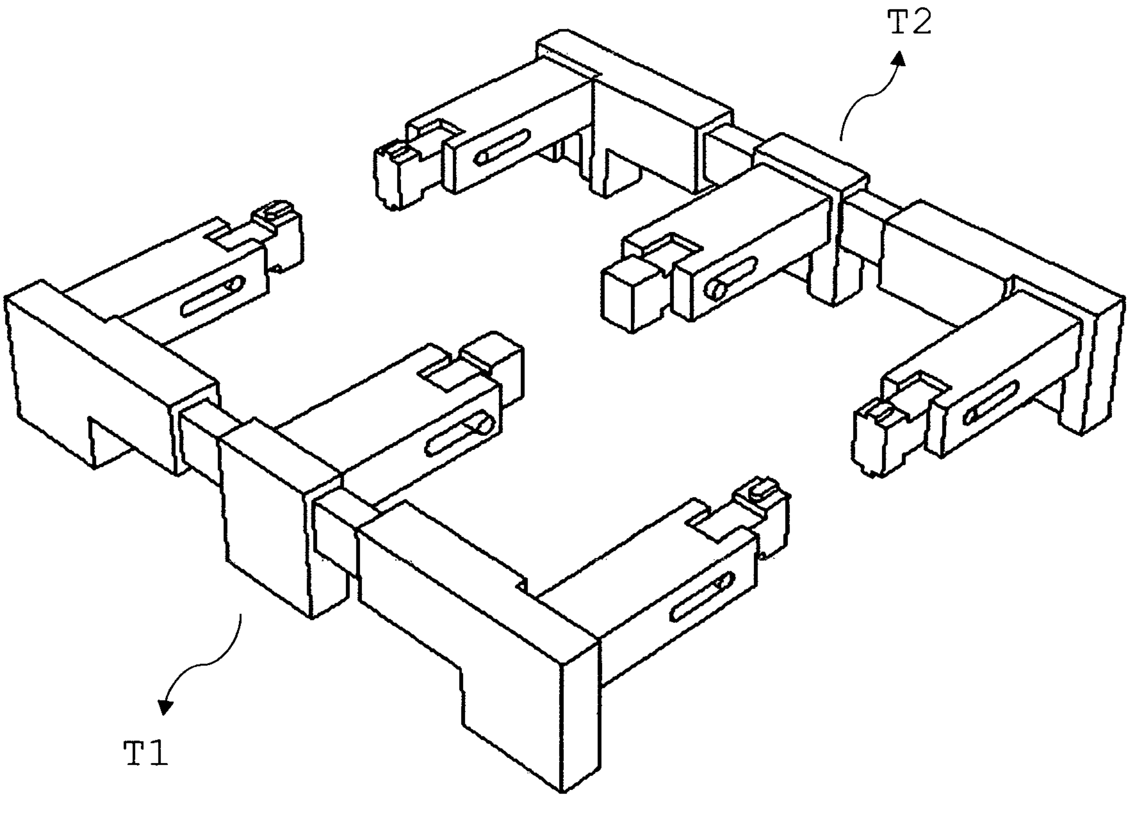


FIG. 3

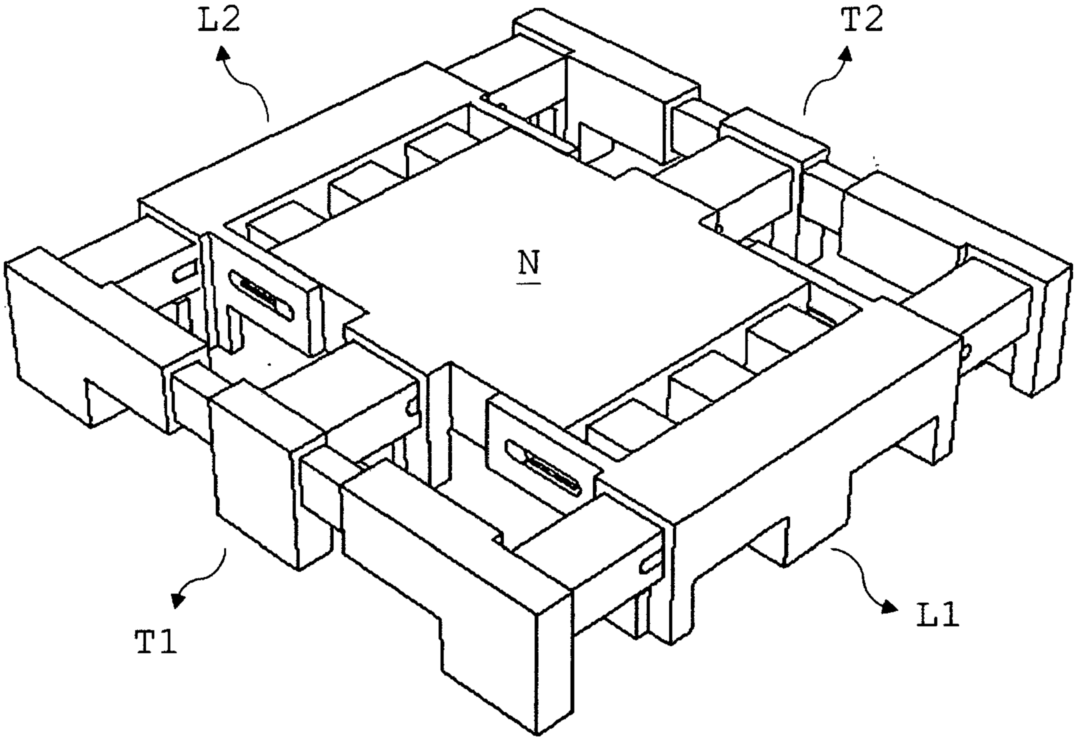


FIG. 4

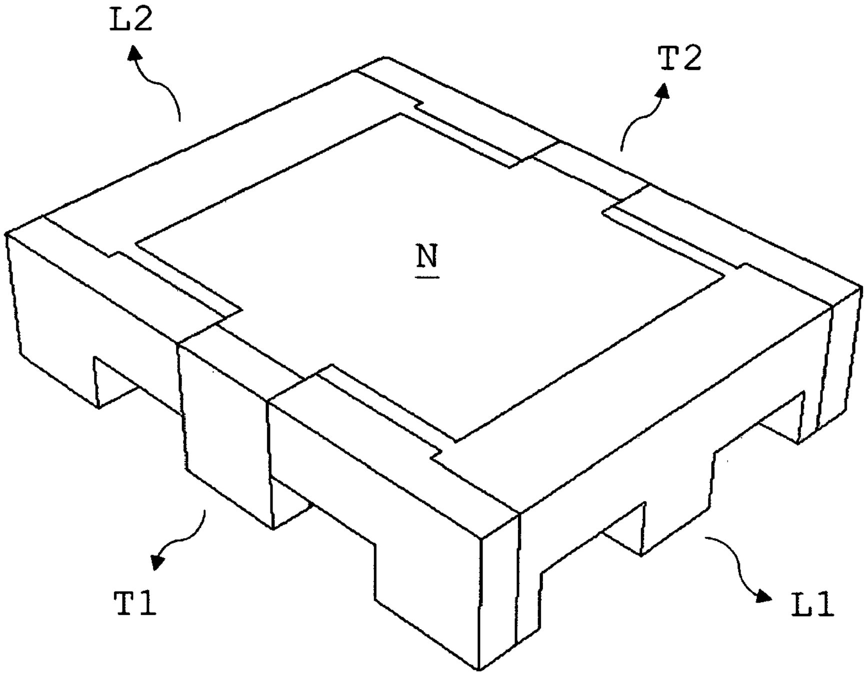


FIG. 5

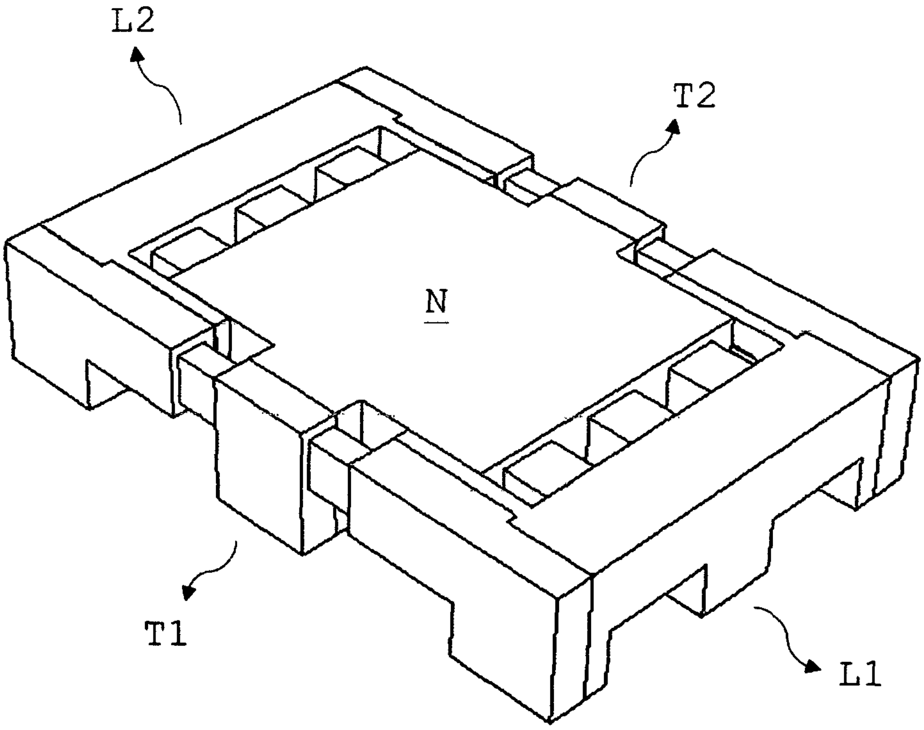


FIG. 6

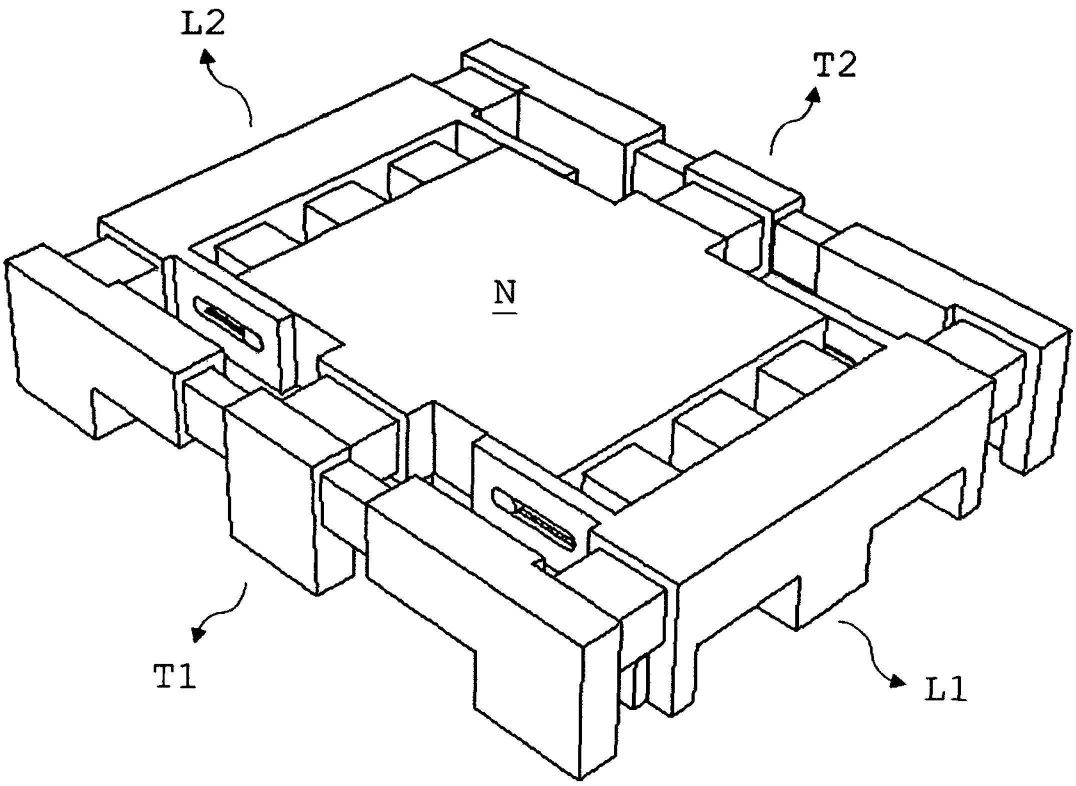


FIG. 7

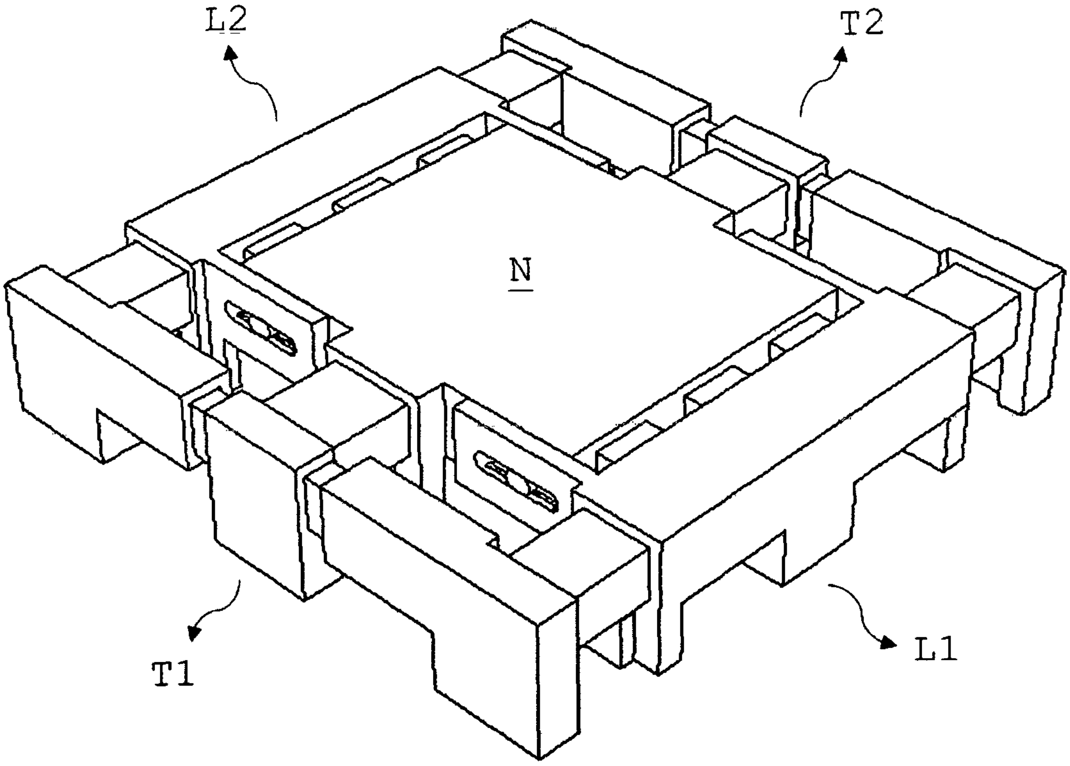


FIG. 8

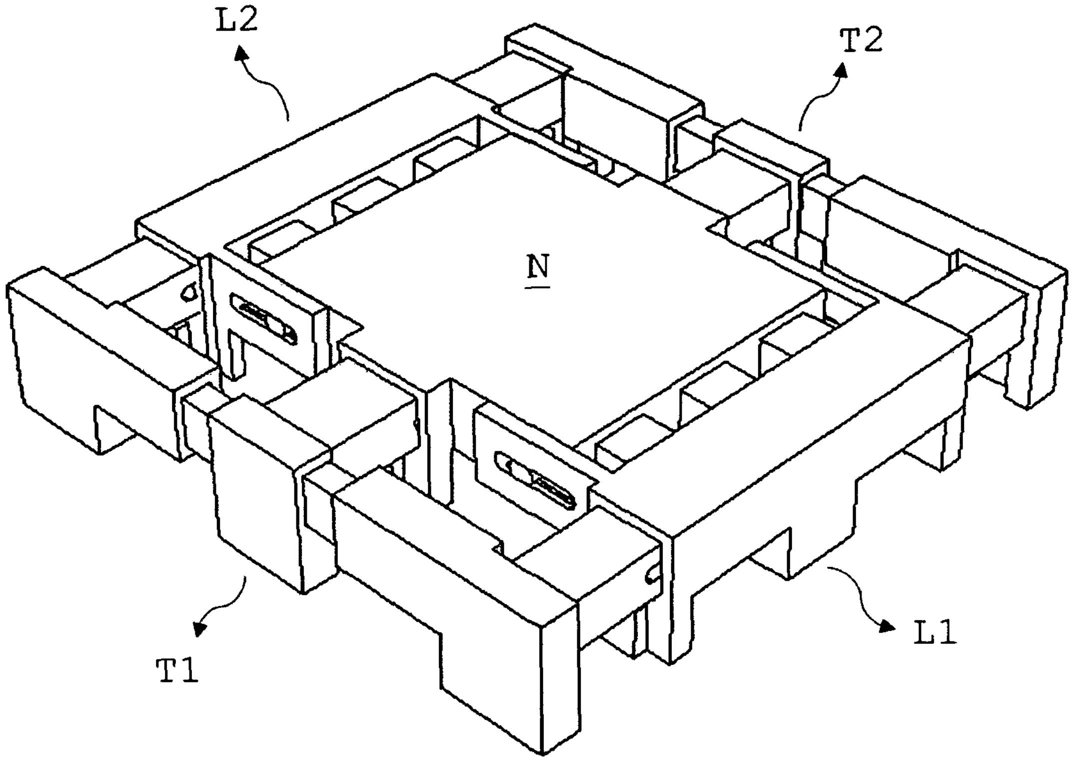


FIG. 9

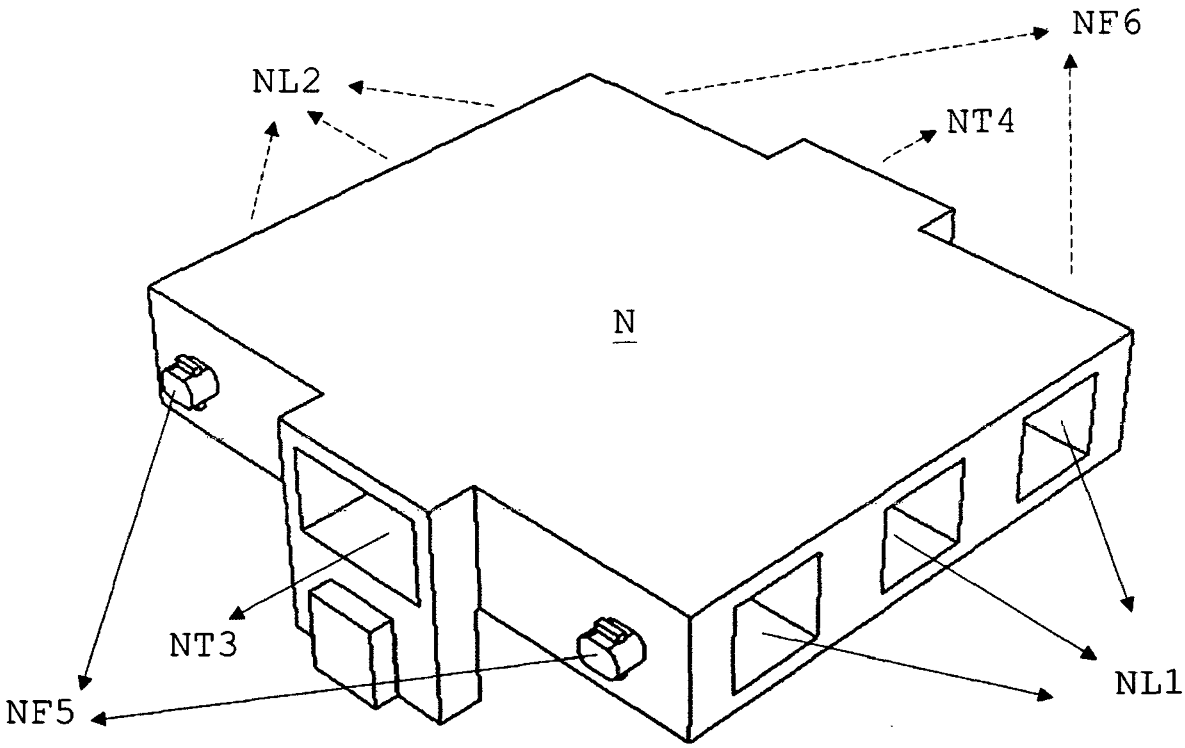


FIG. 10

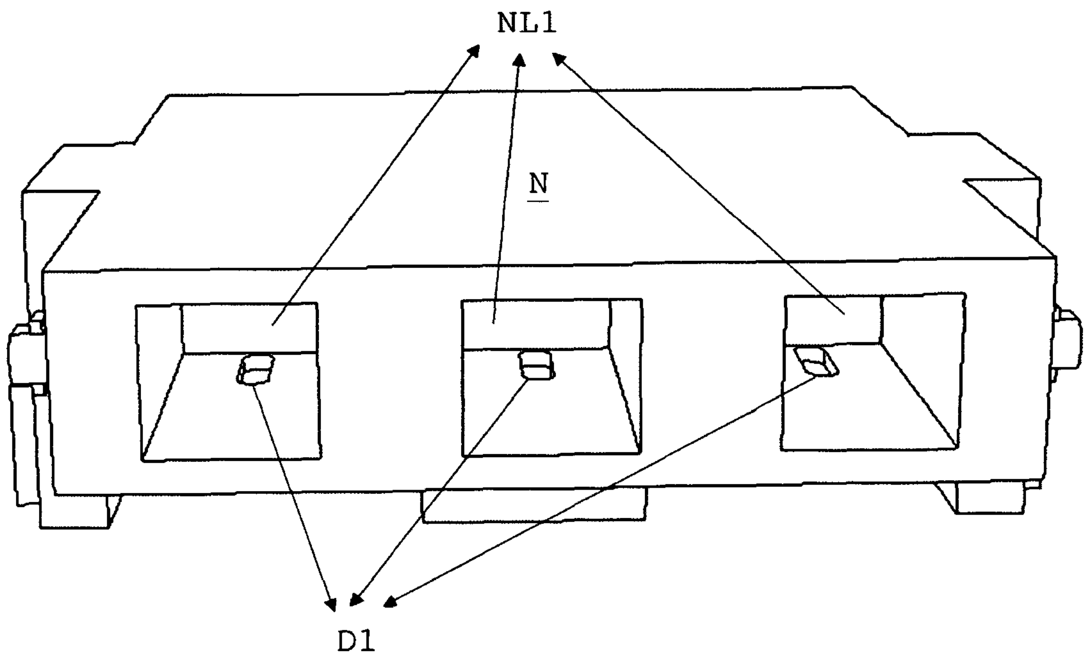


FIG. 11

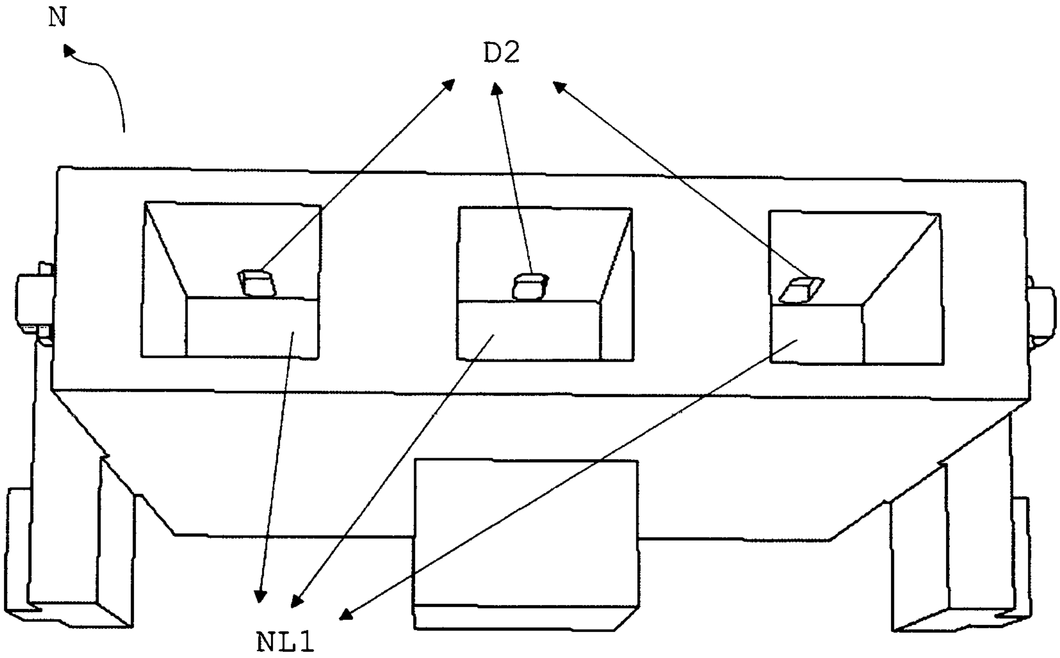


FIG. 12

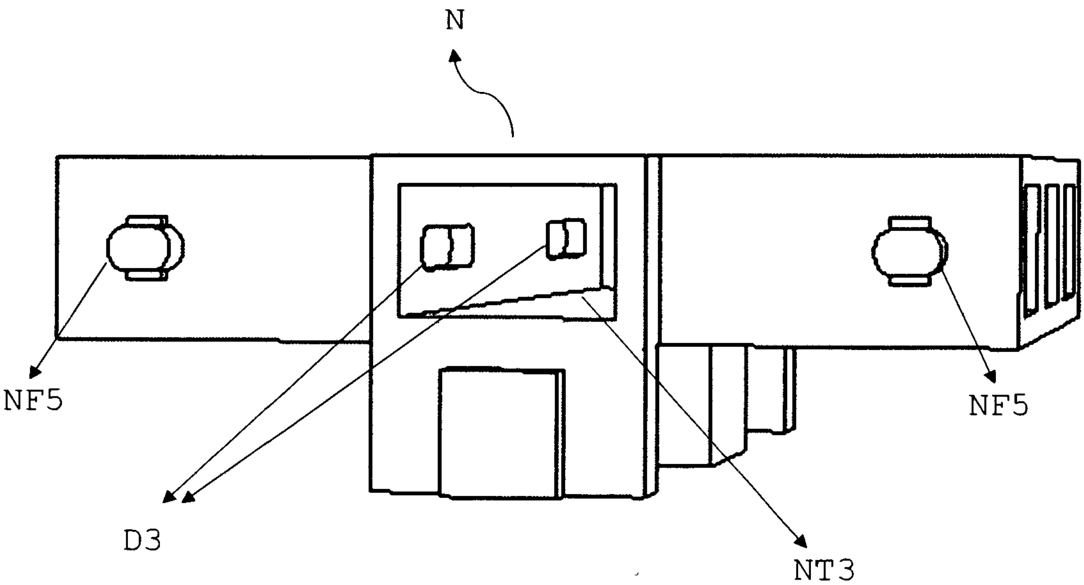


FIG. 13

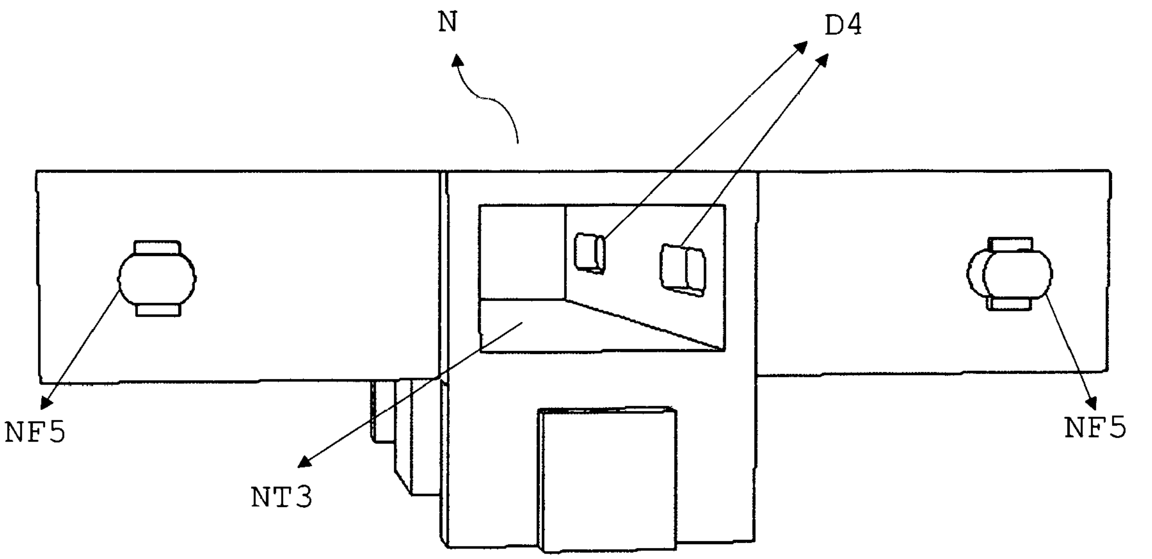


FIG. 14

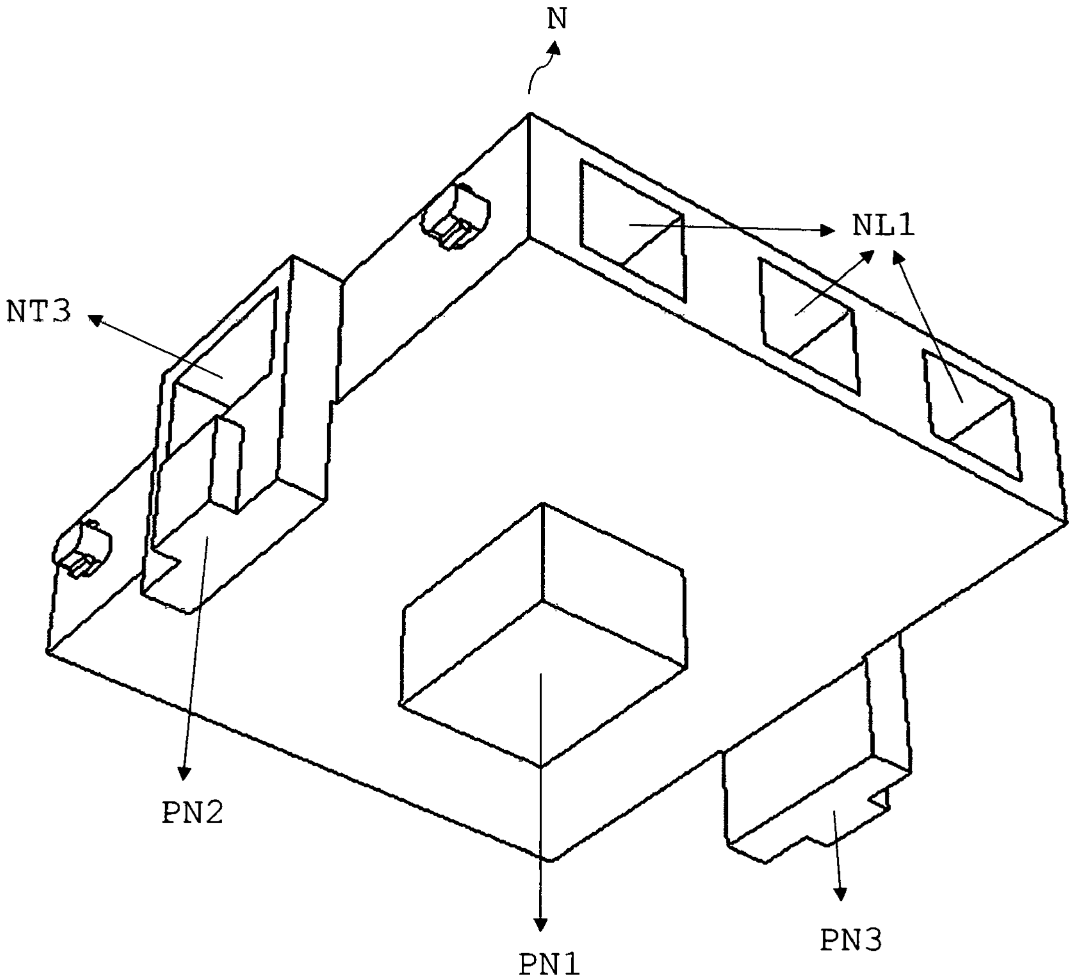


FIG. 15

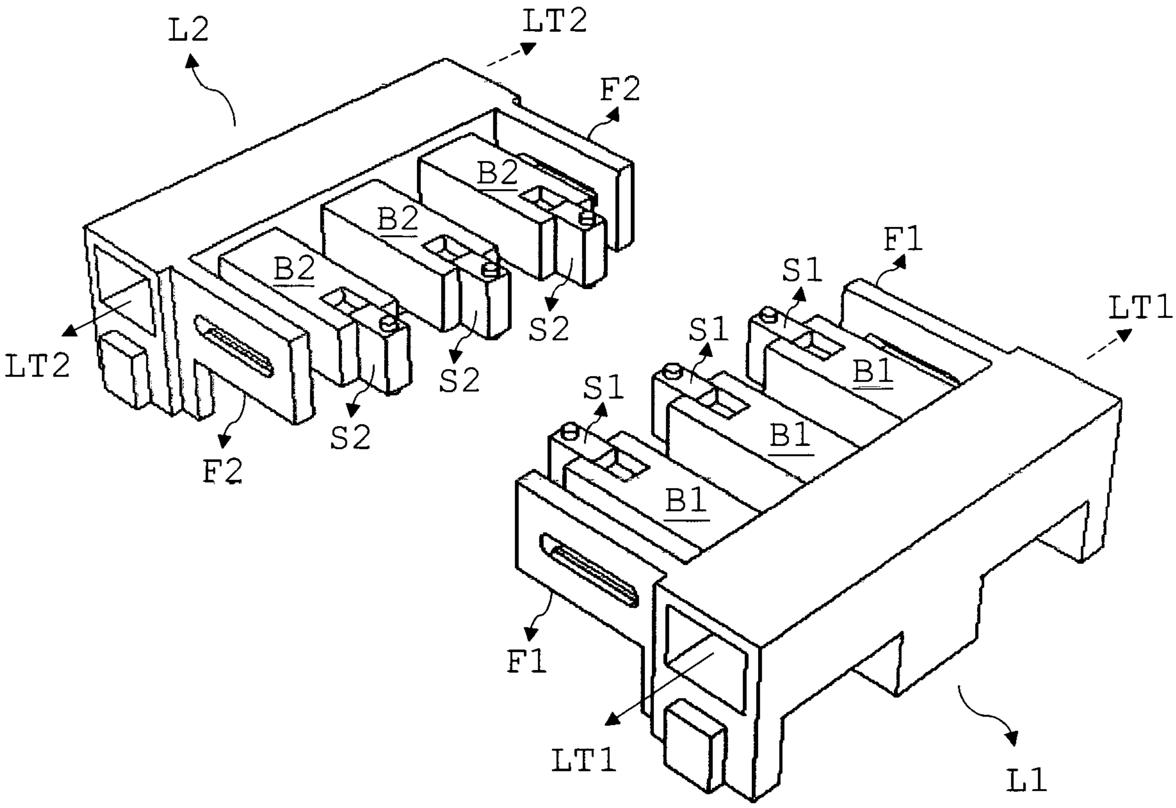
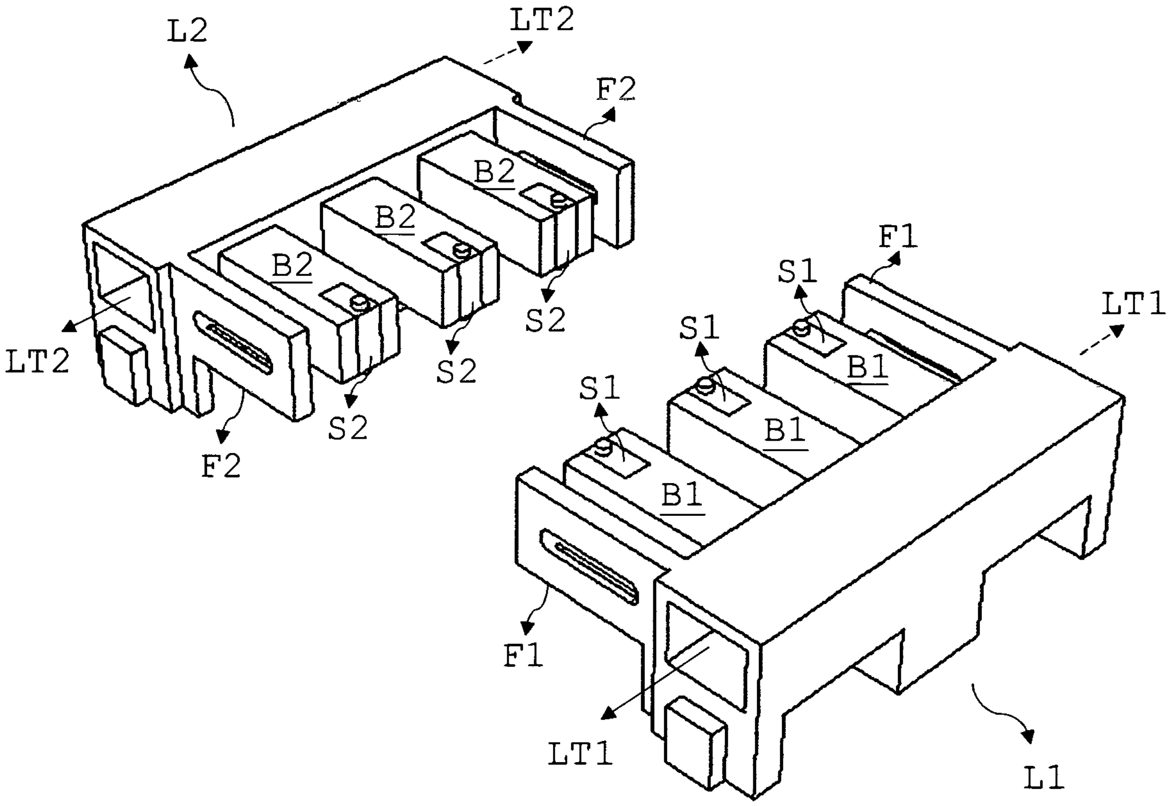

L2
LT2
F2
B2
B2
B2
LT2
S2
S2
S2
F2
F1
S1
S1
S1
LT1
B1
B1
B1
F1
LT1
L1

FIG. 16


L2
LT2
F2
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S2
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S2
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S1
S1
S1
LT1
B1
B1
B1
F1
LT1
L1

FIG. 17

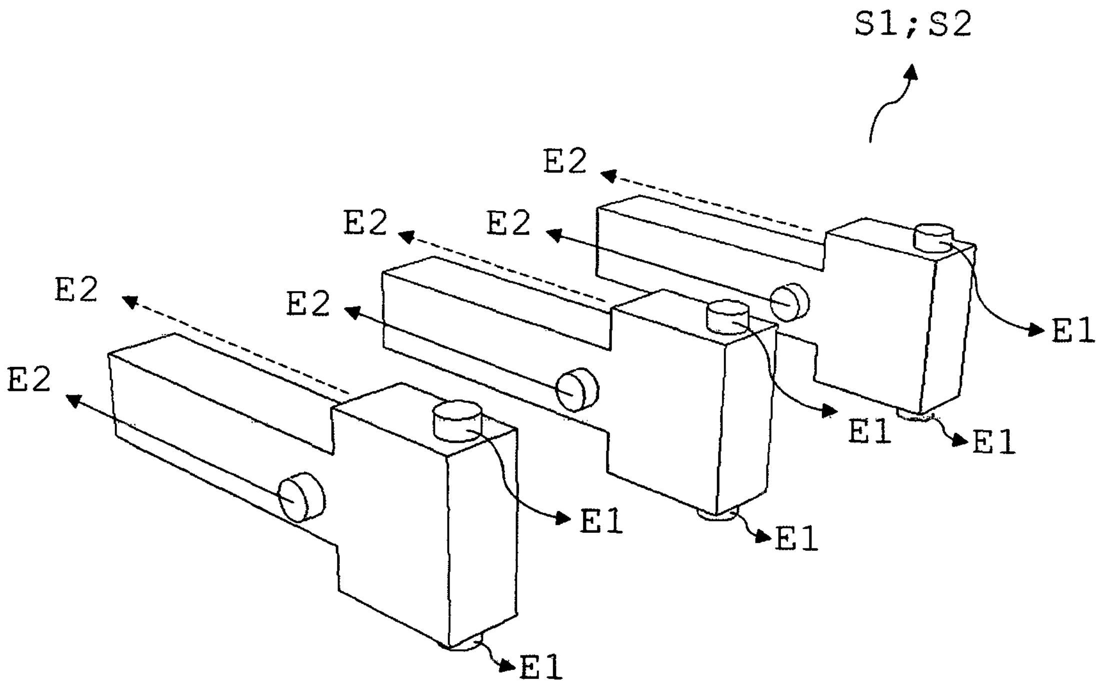
S1;S2
E2
E2
E2
E2
E2
E2
E1
E1
E1
E1
E1
E1

FIG. 18

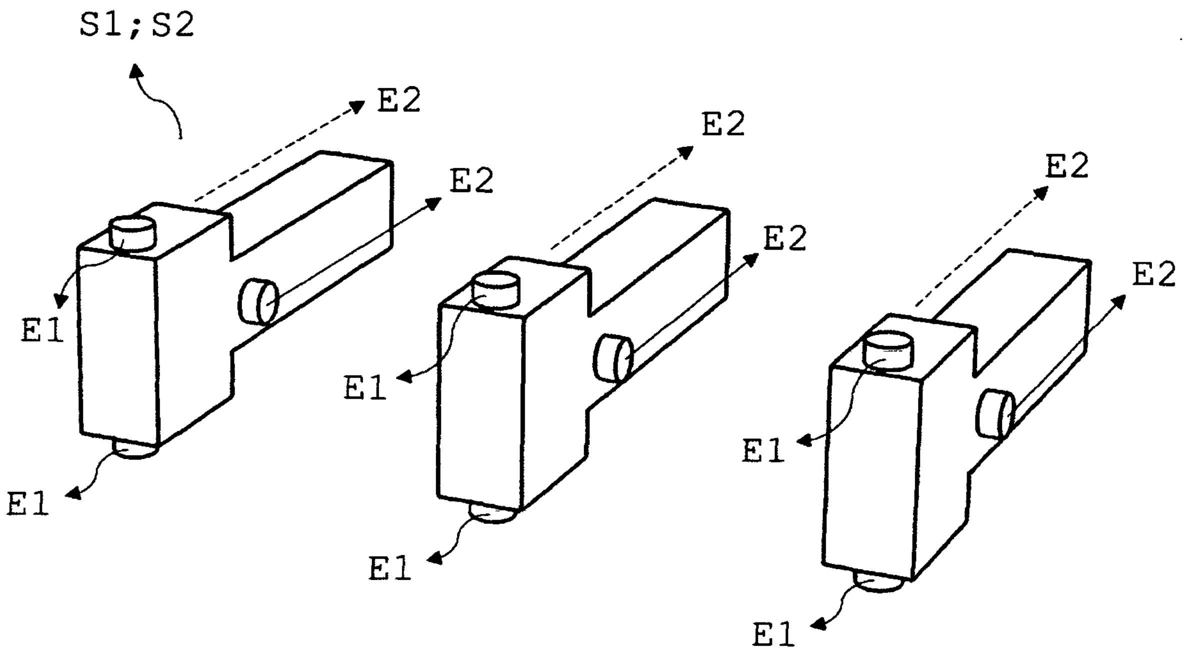
S1;S2
E2
E2
E2
E2
E2
E2
E1
E1
E1
E1
E1
E1

FIG. 19

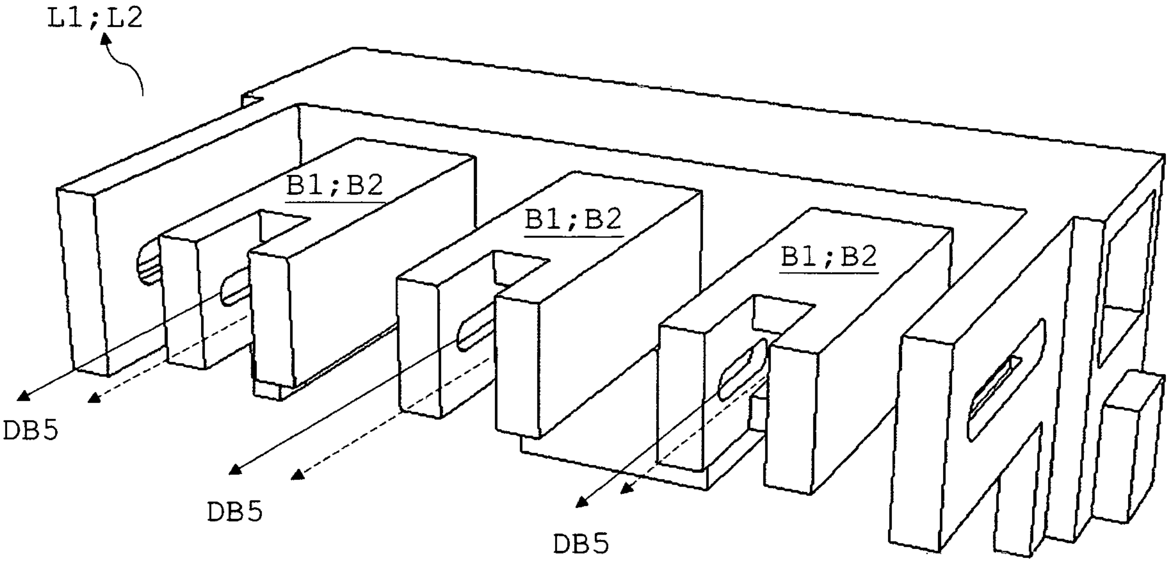
L1;L2
B1;B2
B1;B2
B1;B2
DB5
DB5
DB5

FIG. 20

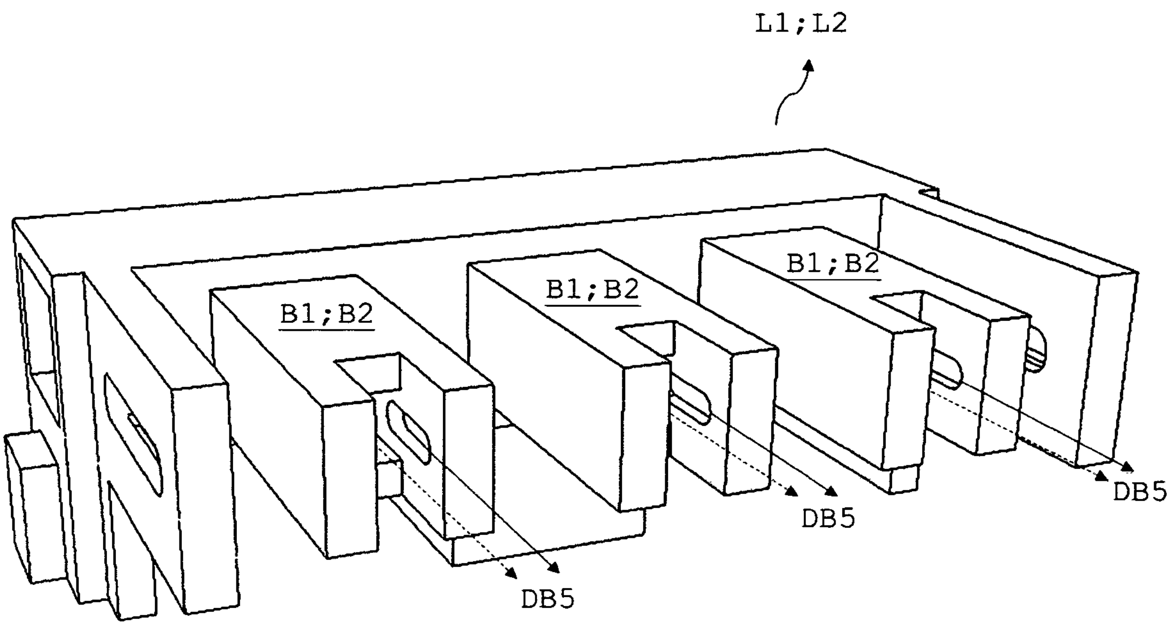
L1;L2
B1;B2
B1;B2
B1;B2
DB5
DB5
DB5

FIG. 21

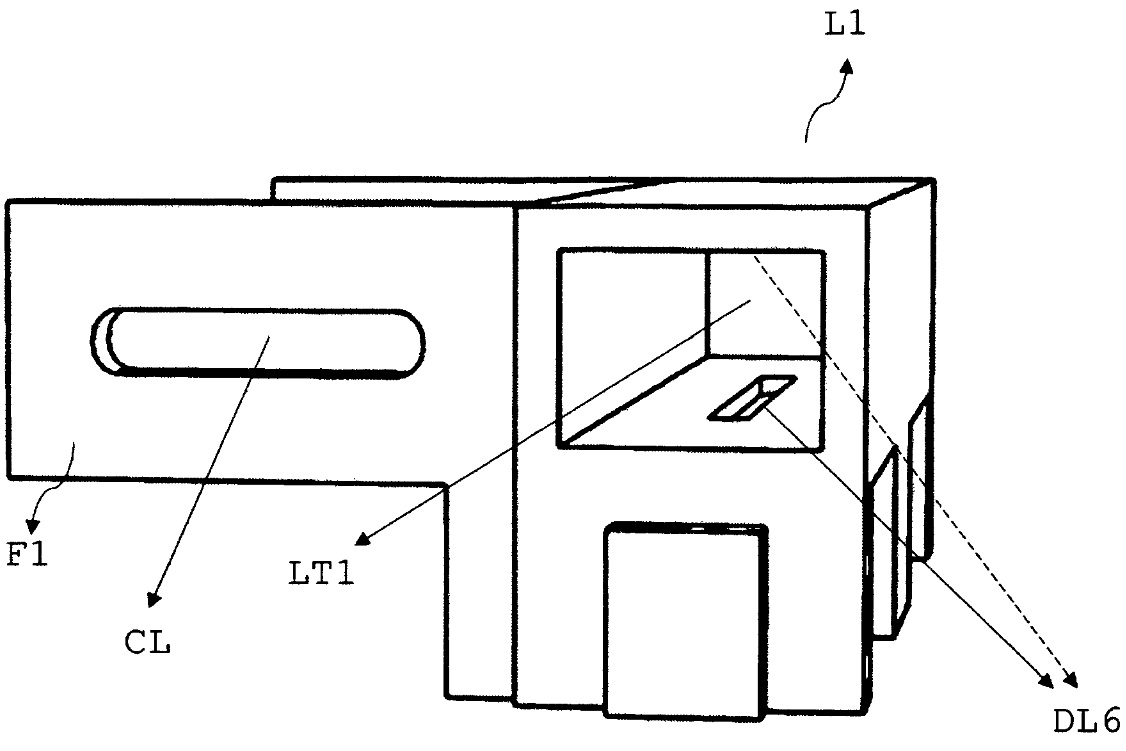

FIG. 22

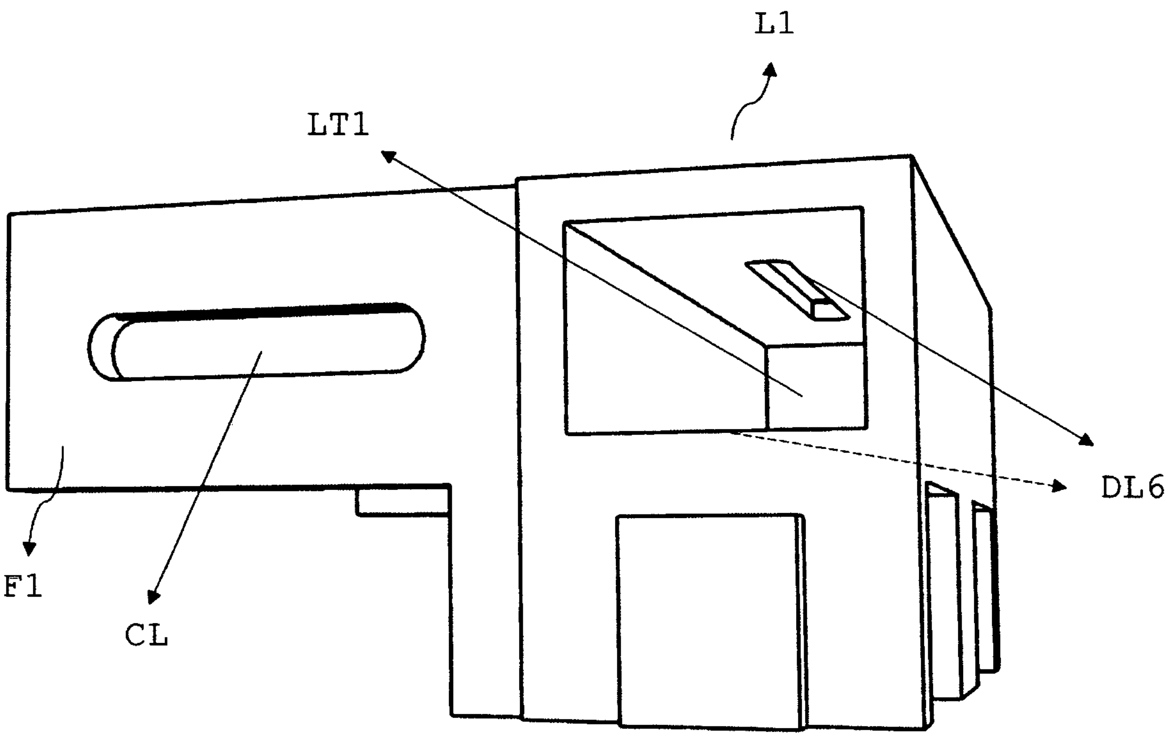

FIG. 23

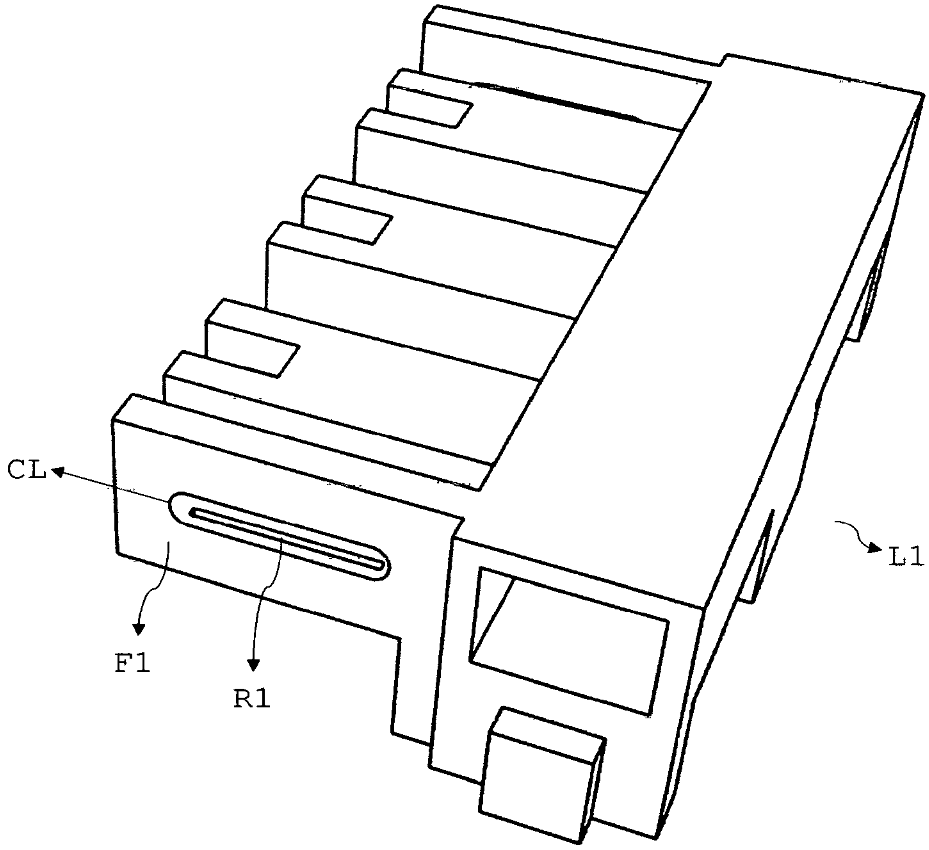

FIG. 24

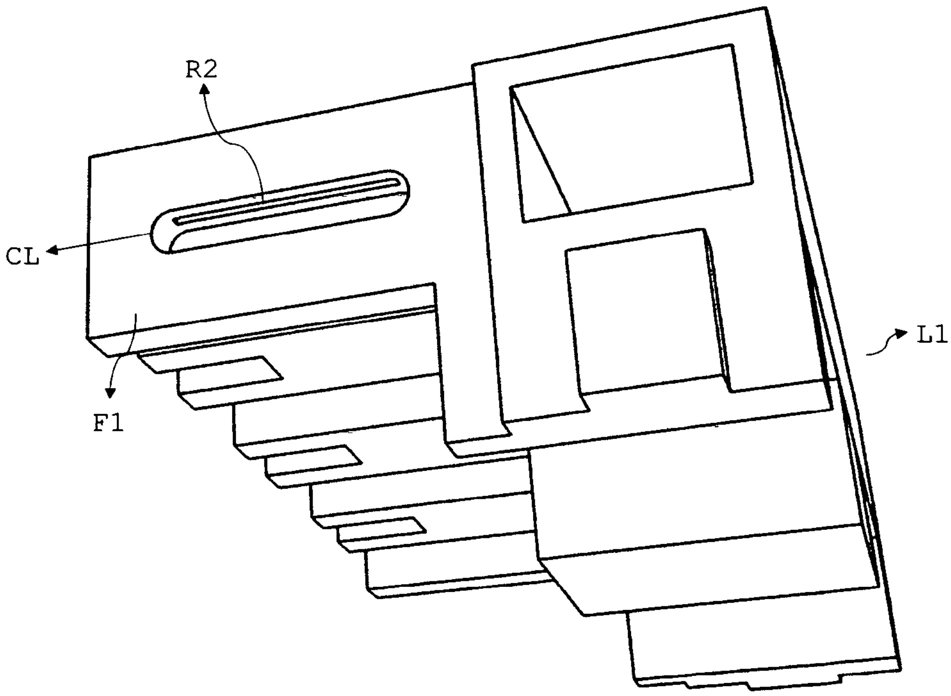

FIG. 25

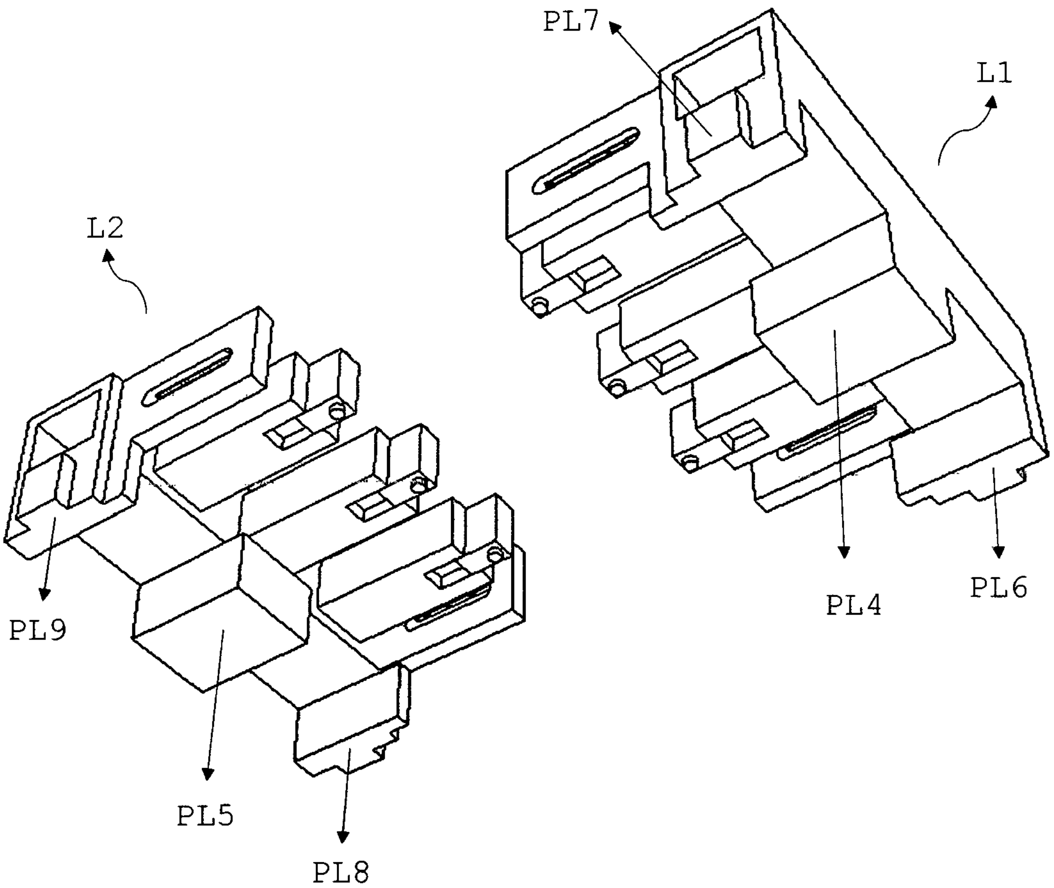

FIG. 26

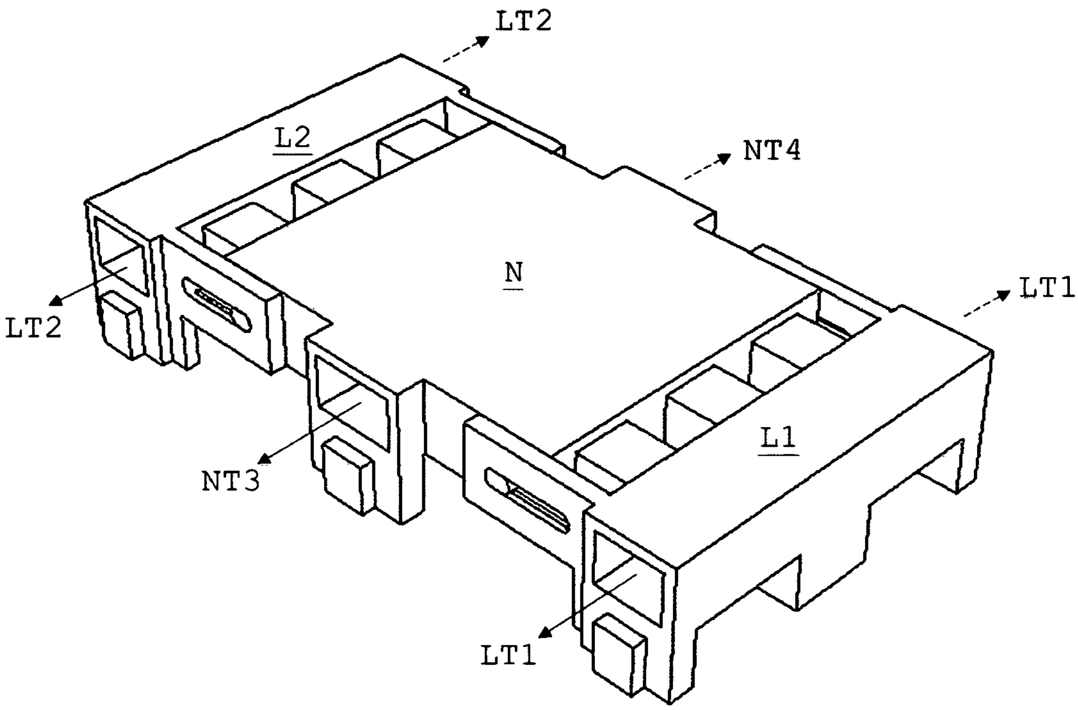

FIG. 27

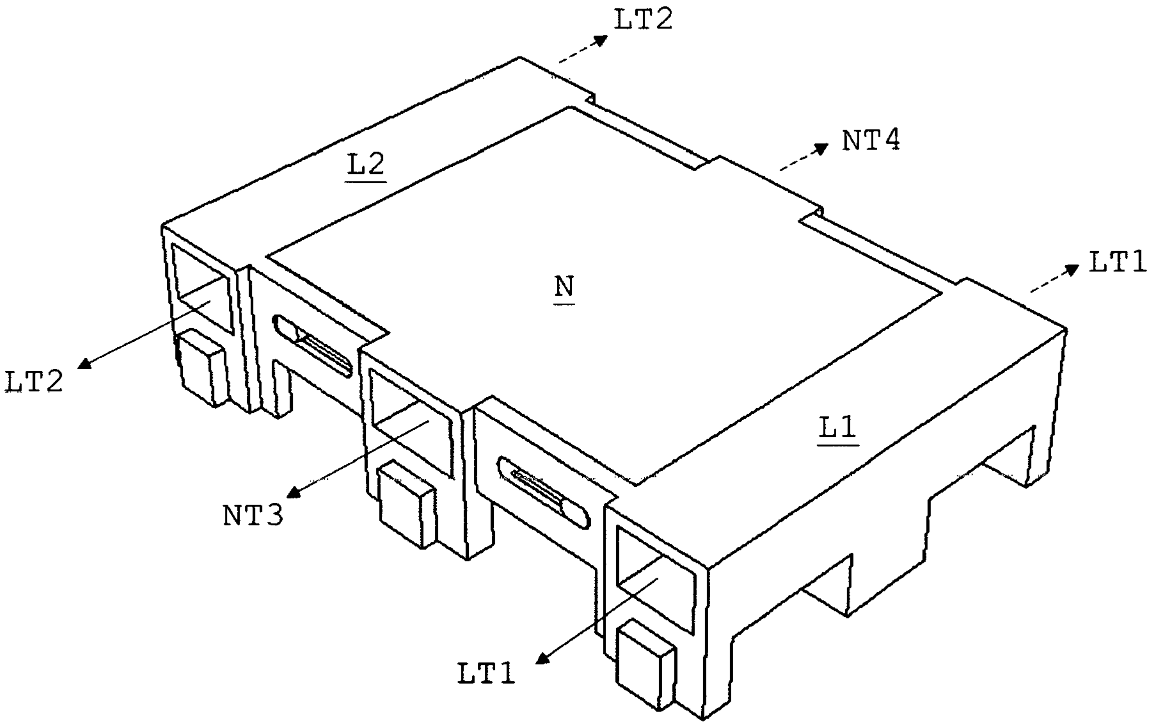
LT2
L2
NT4
N
LT1
LT2
L1
NT3
LT1

FIG. 28

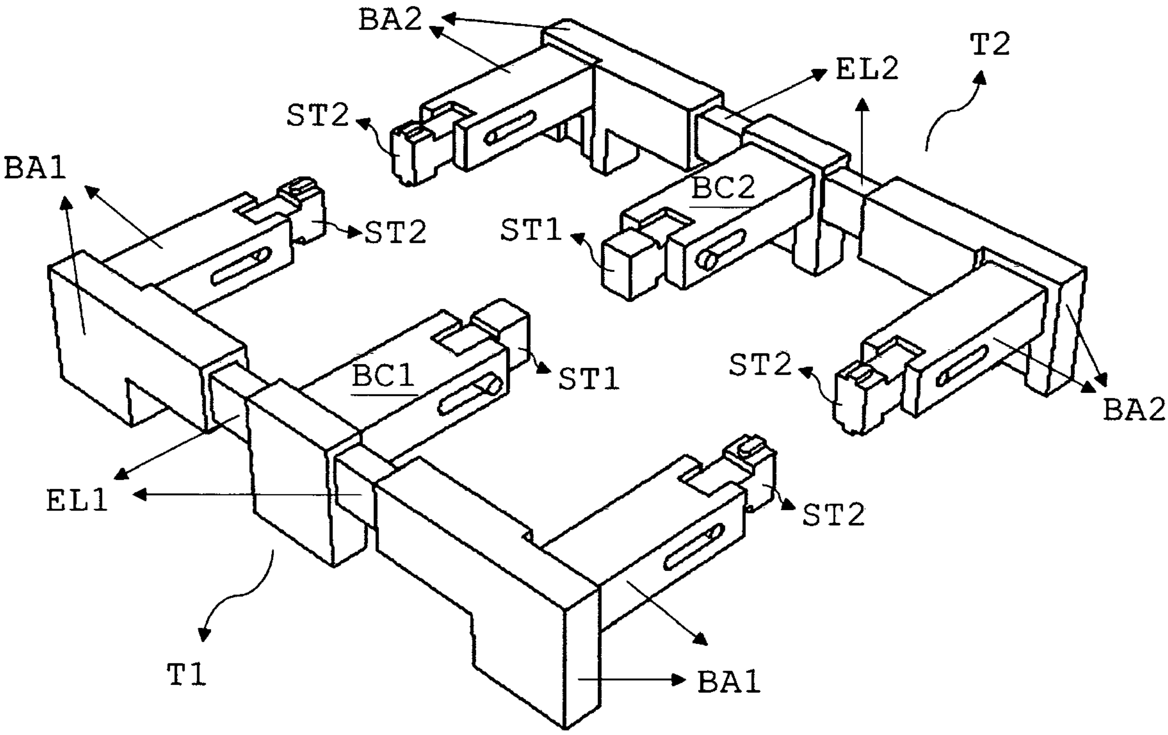
BA2
EL2
T2
ST2
BA1
BC2
ST1
ST2
ST2
BC1
ST1
BA2
EL1
ST2
T1
BA1

FIG. 29

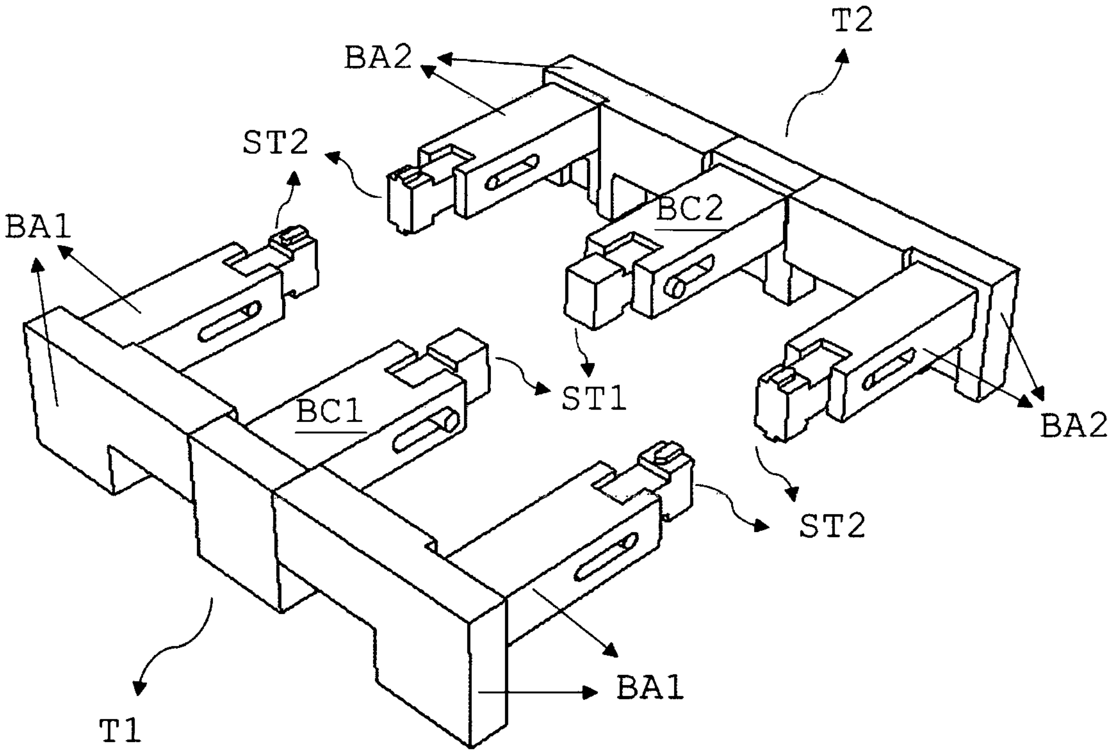
T2
BA2
ST2
BA1
BC2
ST1
BC1
BA2
ST2
BA1
T1

FIG. 30

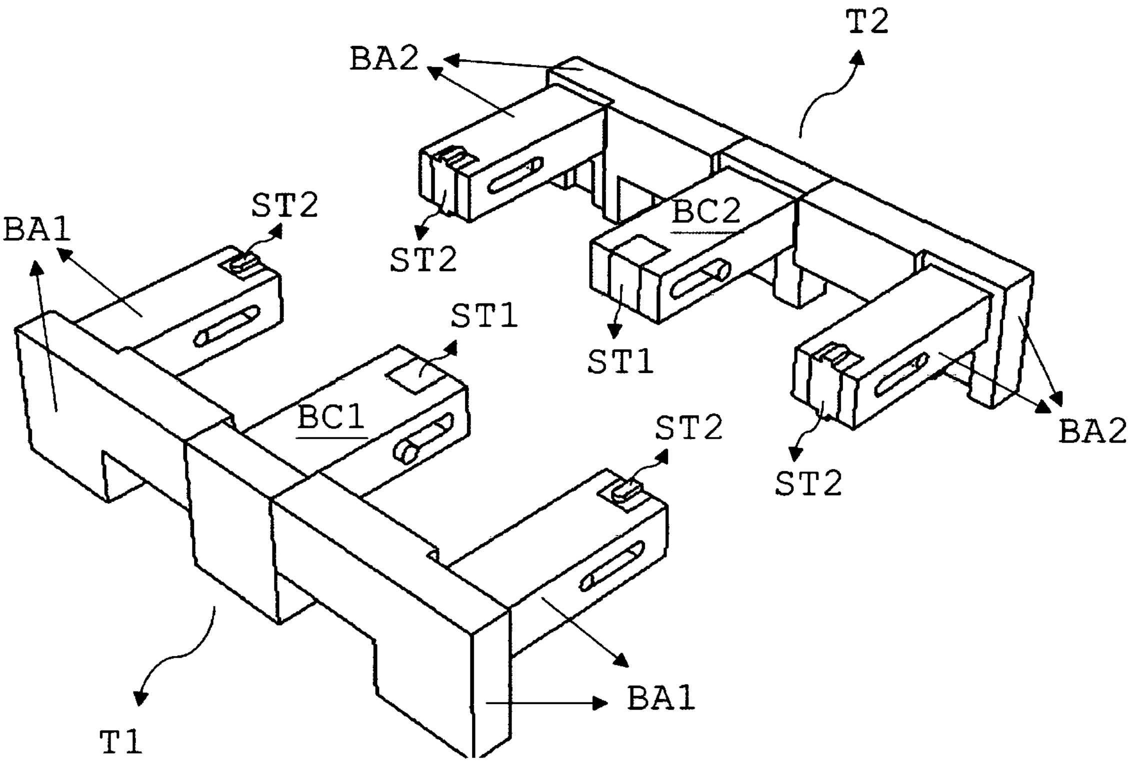
T2
BA2
BA1
ST2
BC2
ST2
ST1
BC1
ST1
ST2
BA2
ST2
BA1
T1

FIG. 31

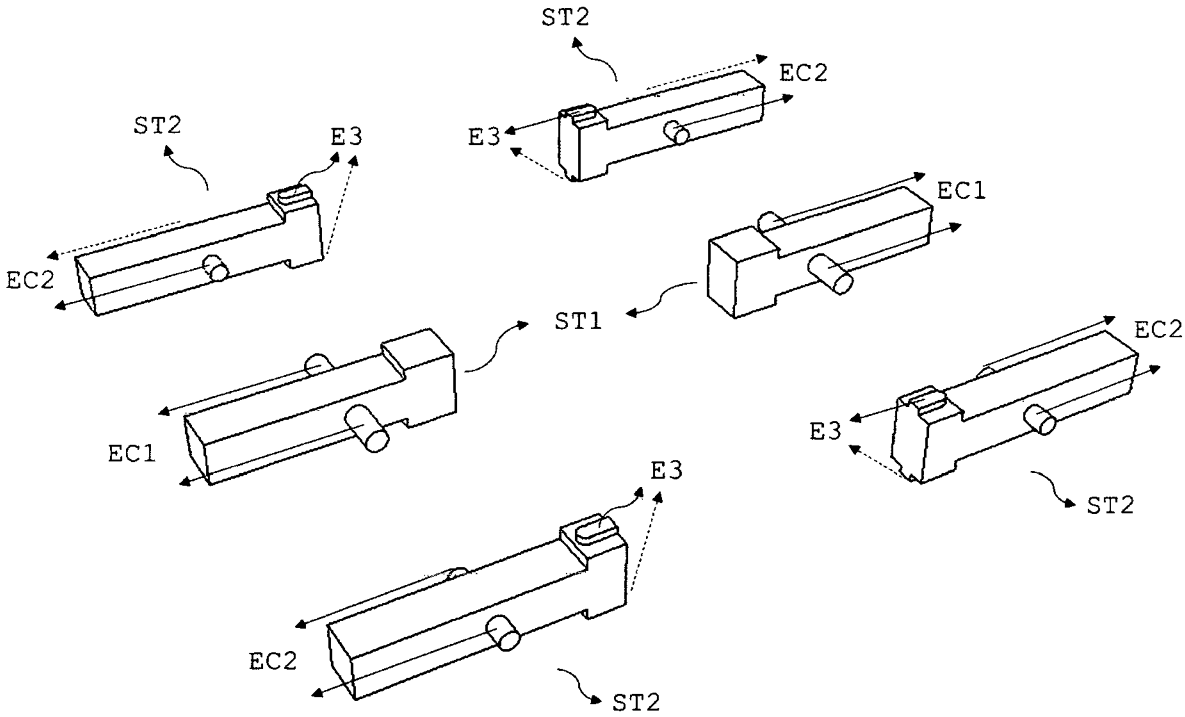
ST2
EC2
E3
ST2
E3
EC2
E3
EC1
ST1
EC1
EC2
E3
ST2
E3
EC2
ST2

FIG. 32

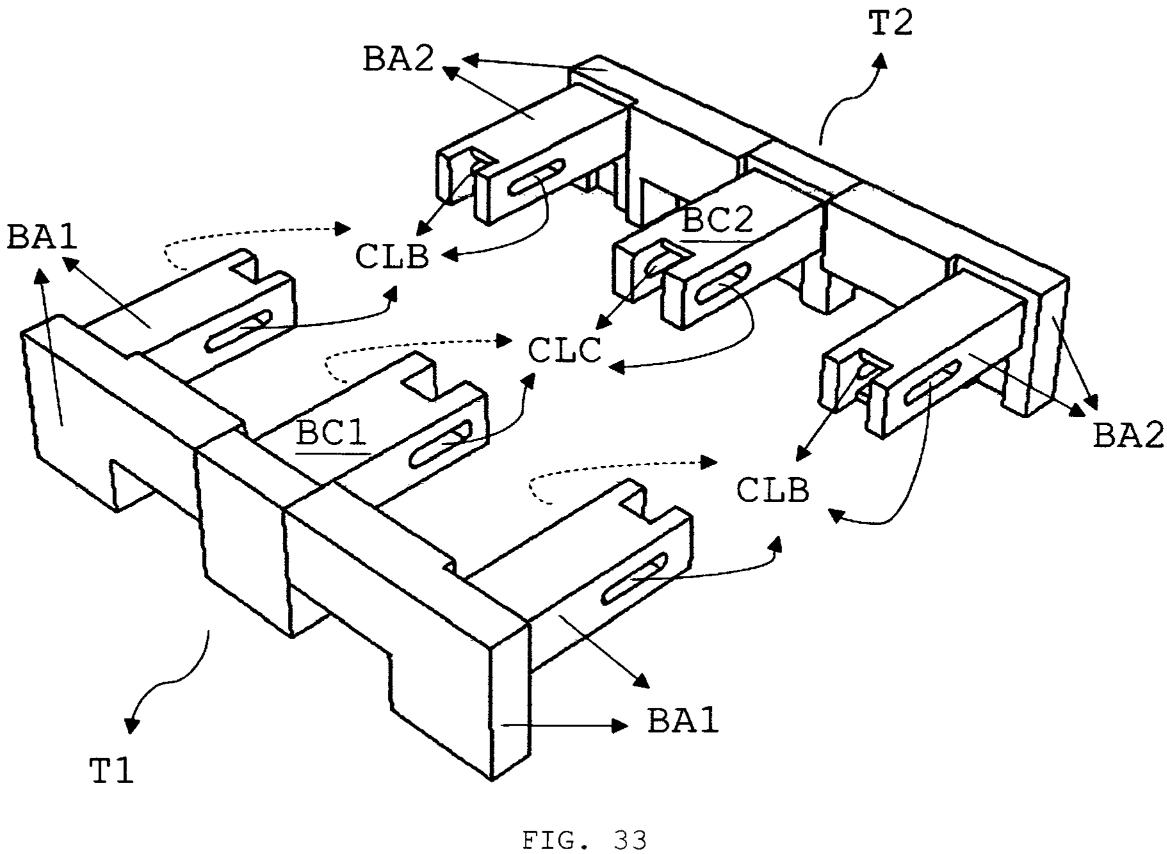
T2
BA2
BA1
CLB
BC2
CLC
BC1
BA2
CLB
BA1
T1

FIG. 33

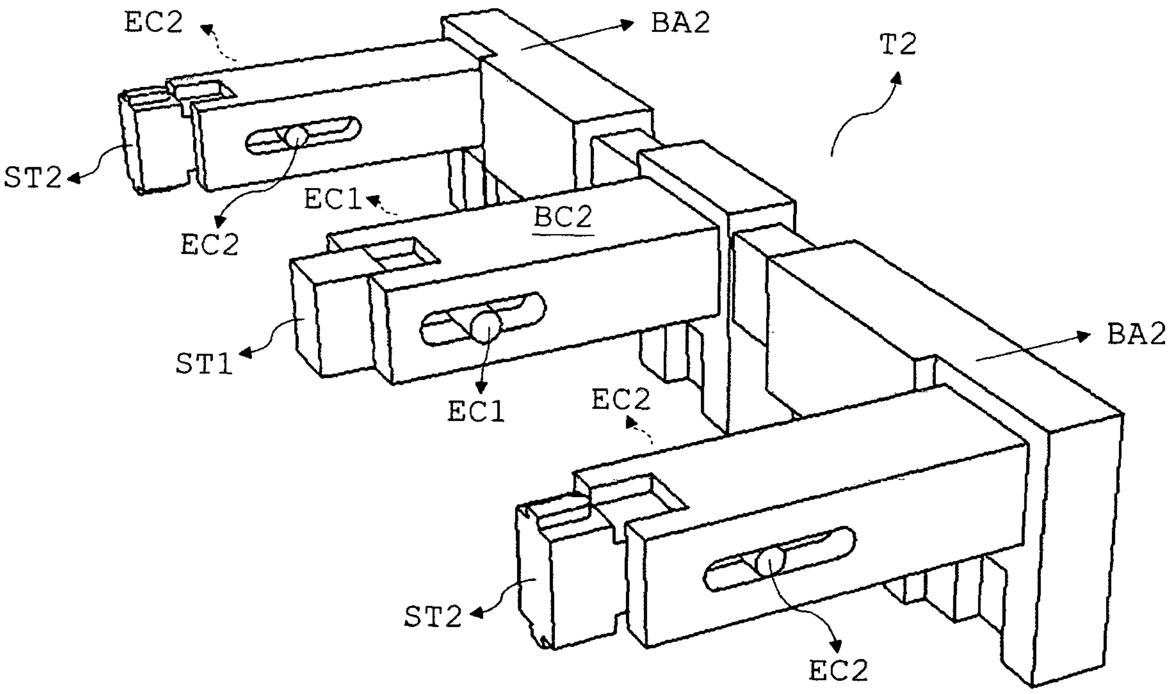
EC2
BA2
T2
ST2
EC2
EC1
BC2
ST1
EC1
EC2
BA2
ST2
EC2

FIG. 34

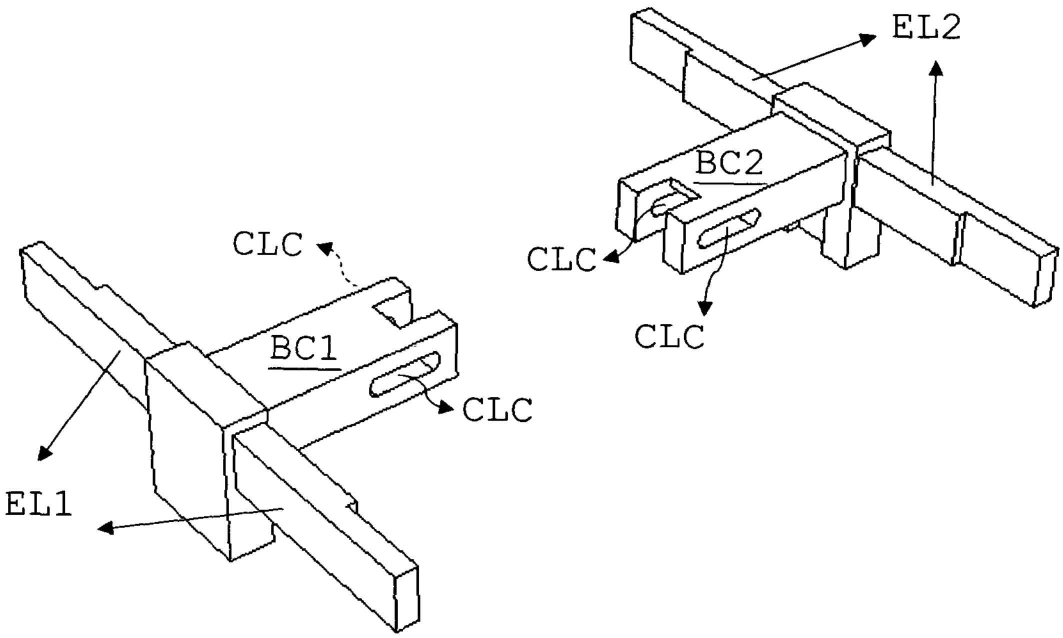
EL2
BC2
CLC
CLC
CLC
BC1
CLC
EL1

FIG. 35

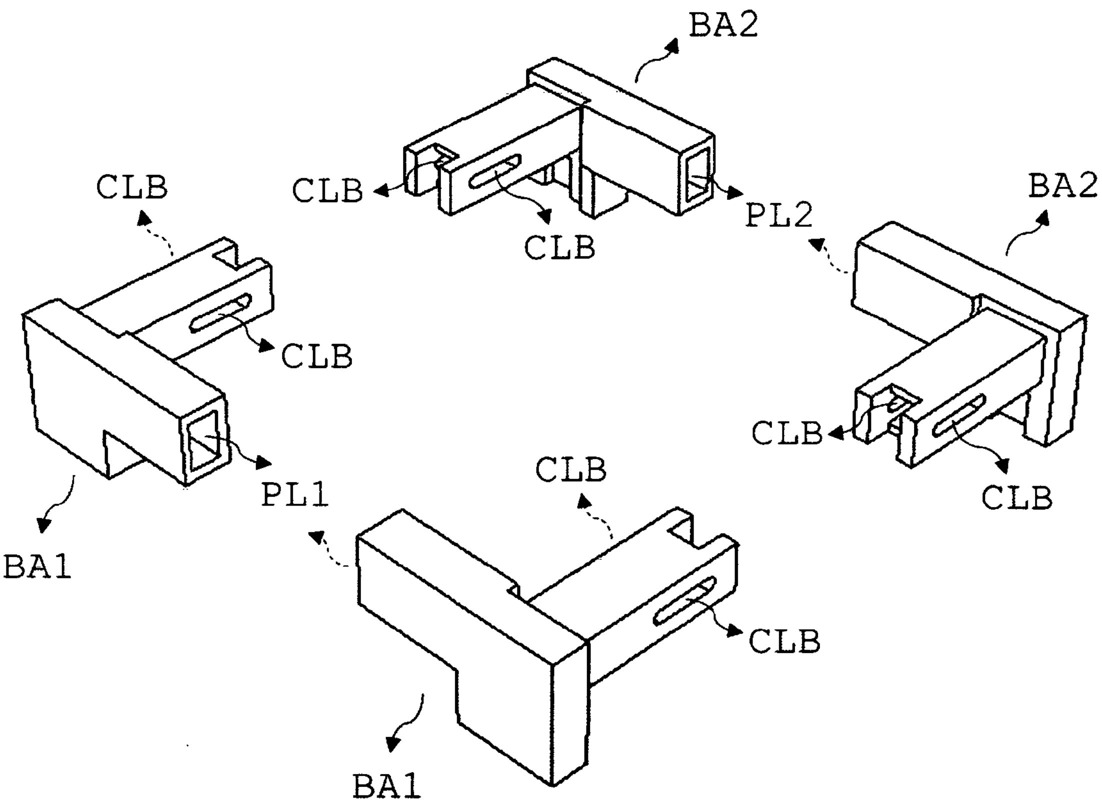
BA2
CLB
CLB
PL2
BA2
CLB
CLB
CLB
CLB
PL1
CLB
BA1
CLB
CLB
BA1

FIG. 36

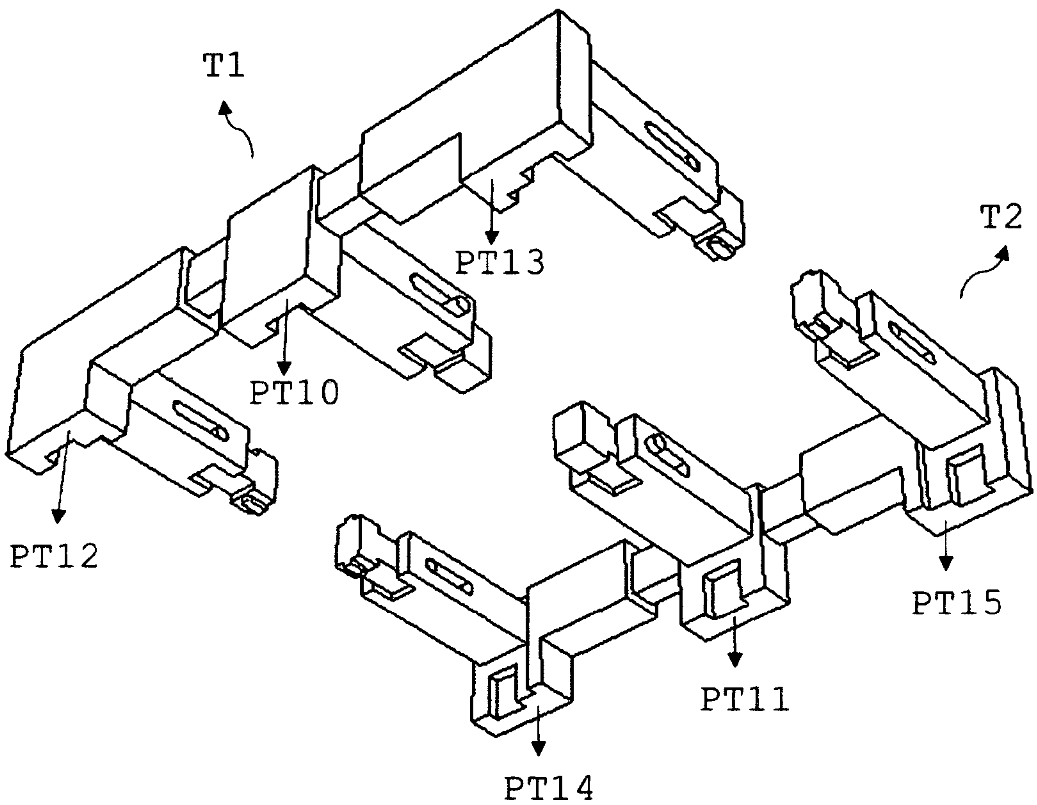
T1
PT13
T2
PT10
PT12
PT15
PT11
PT14

FIG. 37

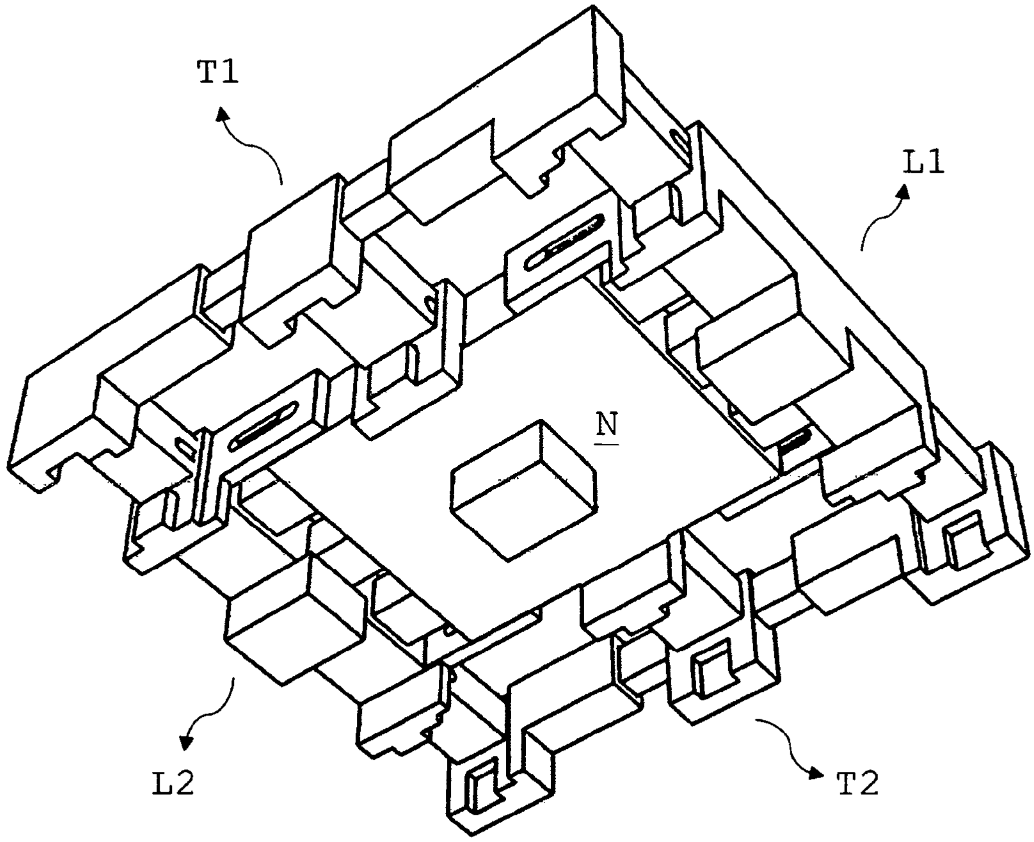
T1
L1
N
L2
T2

FIG. 38

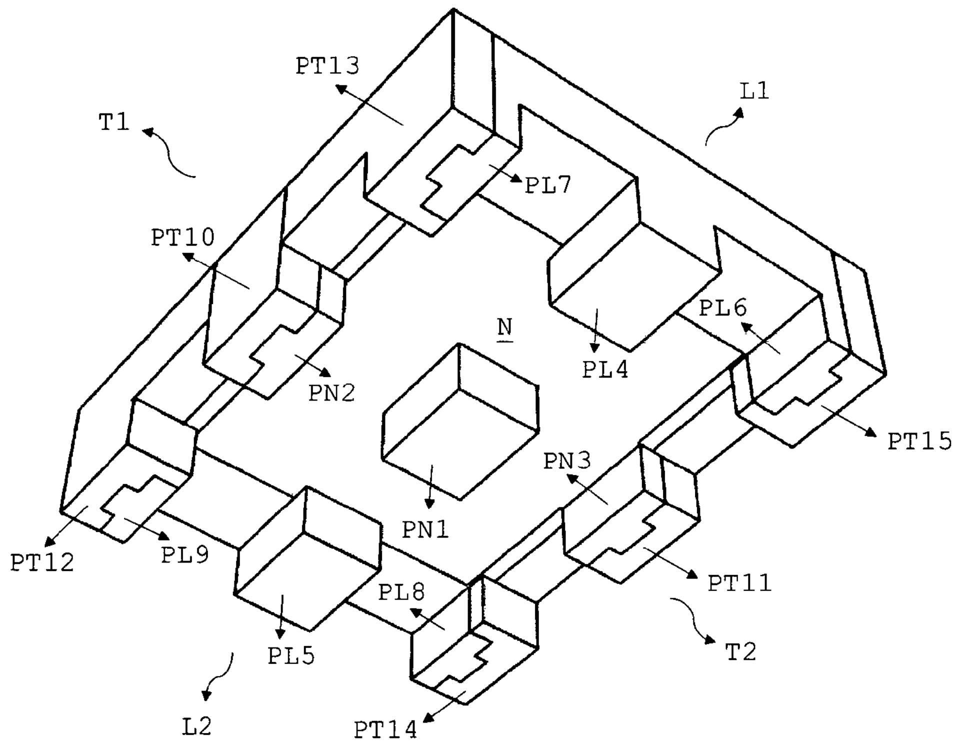
PT13
L1
T1
PL7
PT10
PL6
N
PL4
PN2
PT15
PN3
PN1
PT12
PL9
PT11
PL8
PL5
T2
L2
PT14

FIG. 39

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EUROPEAN SEARCH REPORT

Application Number
EP 24 39 8006

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 113 002 928 B (RIRISHUN SUPPLY CHAIN TECH CO LTD) 7 February 2023 (2023-02-07)	1	INV. B65D19/26
A	* figures 3-8 *	2-15	

X	WO 98/36982 A1 (DECORBIE GISLAIN [FR]) 27 August 1998 (1998-08-27)	1	
A	* page 1 - page 2; figures 1-2 *	2-15	

X	US 2014/110551 A1 (KUO YICHENG [CN] ET AL) 24 April 2014 (2014-04-24)	1	
A	* paragraph [0042] - paragraph [0047] * * figure 4 *	2-15	

X	US 2 739 776 A (TERANDO LOUIS M) 27 March 1956 (1956-03-27)	1	
A	* column 2, line 55 - column 5, line 16; figures 1-17 *	2-15	

X	CN 113 184 334 A (XU MINGANG) 30 July 2021 (2021-07-30)	1	
A	* figures 1-11 *	2-15	TECHNICAL FIELDS SEARCHED (IPC)
	-----		B65D

The present search report has been drawn up for all claims

1

Place of search	Date of completion of the search	Examiner
Munich	11 October 2024	Fitterer, Johann

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11-10-2024

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- KR 20210025147 **[0018]**
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- RU 2667233 **[0021]**