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## Universal chassis

The invention relates to a universal chassis for the handling and/or fastening of goods, such as a product, box, frame or structural element. The invention also relates to the use and manufacture of such a universal chassis.

### Background of the invention

Box solutions attached to an interchangeable platform or shop platform are often used in the handling of goods. Boxes can be fastened to the bases by riveting, gluing, or by using different kinds of hoops, bands or lines. The box can likewise be attached to the chassis by means of fastening bolts that are pressed through fastening holes. There is also in use a fastening method, in which fastening flaps of a cardboard box are folded to the fastening cavities in the shop platform. Also roller cage bases and racks provided with stationary baskets are used for transporting goods.

The methods currently used for the fastening of goods are often laborious and slow, and they require special caution when mounting the goods. Excessive residue may also be formed in their use, which again raises costs. Fastening methods can also be unreliable.

### Description of the invention

The object of the invention is to form a universal chassis for the handling and/or fastening of goods in an especially fast and reliable manner.

In order to achieve this object, the invention is characterised by the issues disclosed in the independent patent claims. The other patent claims disclose some advantageous embodiments of the invention.

The universal chassis of the invention has a base part, to which one or several of the following elements can be fastened either detachably and/or fixedly:

- a mounting slot,
- a fastening rail,
- an intermediate fastening part, which can be attached to the goods and the universal chassis,
- a fastening edge,
- a side fastening element in the lateral plane of the universal chassis.

The fastening of goods to the chassis by means of the mounting slot or fastening rail can be done very fast, flexibly and accurately. It is possible to fasten cardboard containers, plastic walls or steel walls to the slot or rail.

5 A mounting slot embedded to the base again has the advantage that the surface of the base itself remains smooth in the upward direction.

10 The intermediate fastening part, which can be fastened to the goods and the universal chassis, makes possible the handling of diverse goods. In this case goods of multiple sizes and shapes can be fastened to the universal chassis. The intermediate fastening part can then be connected to the goods either detachably or fixedly, depending on the embodiment. The intermediate fastening part can be, for example, a rack fastening element for fastening a rack to the universal chassis. The intermediate fastening part can also be, for example, a fastening mould in accordance with the size of the box.

15 Goods of different sizes can be fastened to the same universal chassis by using the fastening edge. The fastening edge can be installed to a certain position or it can advantageously be mobile. Mobility can be achieved in a stepless or stepped manner. In a certain advantageous embodiment the fastening edge is attached to the mounting slot or fastening rail so that the adjustability of the universal chassis is especially good.

20 Universal chassis can be attached to each other by using a side fastening element and, in addition, it can be used for the handling/fastening of goods in the lateral plane, and it can also be used for the overhead fastening/supporting of goods.

25 The goods may again advantageously have a fold edge, such as a V fold, which can be mounted detachably for example to the mounting slot or fastening rail. They again may advantageously contain service apertures for accelerating the detachment of the V fold. The length of the V fold is preferably 50 – 100% of the length of the goods edge, such as 75 – 100% of the length of the box edge. In this way the connection can be made especially solid and, at the same time, the installation of the fold to the mounting aperture of the rail or slot is effortless and does not require any special alignment.

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According to an object of the invention, for connecting the fastening element to the universal chassis at least one connection element has been selected from the group containing:

- a fastening hole

- a fastening aperture
- a connection slot
- a fastening link
- a clip aperture
- 5 - a fastening notch
- a fastening projection
- a fastening tongue and groove
- a fastening lath
- a fastening pin
- 10 - a fastening bar
- a fastening glide
- a fastening hinge
- a fastening edge
- a fastening lid
- 15 - a fastening belt
- a fastening base.

According to an object of the invention, the universal chassis has a fastening lid, which can be mounted on top of the goods for fastening and/or protection. The fastening will be advantageously made with fastening belts, which can be attached  
20 to the base part, such as its fastening holes/fastening apertures/mounting slots and/or fastening rails. The fastening belts may further have e.g. openable snap-on clips.

According to an object of the invention, the universal chassis has a fastening base and/or fastening projection, which is detachably attached to the universal chassis.

25 According to an object of the invention, the universal chassis has a fastening base and/or fastening projection, which can be attached at least to the rim or edge of the universal chassis.

According to an object of the invention, the universal chassis has one or several connection elements, such as hinges or bars for attaching the fastening base  
30 and/or fastening projection at least partly folded to the universal chassis.

According to an object of the invention, the universal chassis has a fastening projection, which can be attached directly to the universal chassis. It is, for example, possible to manufacture a universal chassis, the rim of which is provided with fold-

ing fastening projections attached directly to the projection fastening element/elements of the universal chassis.

According to an object of the invention, the universal chassis has a fastening projection, which can be attached to the universal chassis indirectly by means of the fastening base. The universal chassis advantageously has a fastening base, the rim of which is provided with one or several foldable fastening projections.

According to an object of the invention, the goods or the universal chassis has one or several fastening projections, such as locking latches and, respectively, the universal chassis or goods has fastening apertures for inserting the fastening projections. It is also possible to make a reversed structure so that the universal chassis has the fastening projection and the goods have the fastening aperture. In this case, the goods may advantageously have a fastening aperture or fastening notch corresponding to the fastening projection and fastening aperture in the universal chassis.

According to an object of the invention, a foldable fastening element is connected to the goods, such as a box or rack.

According to an object of the invention, the universal chassis has wheels and one or several mounting apertures for inserting the wheels when piling the universal chassis on top of each other.

According to an object of the invention, the universal chassis also has a fastening base, the rim of which is provided with one or several foldable fastening edges. The fastening edge has one or several fastening projections and/or fastening apertures.

The universal chassis can have one or several fastening apertures and/or fastening projections equivalent to the fastening projections and/or fastening apertures in the fastening edge. The fastening projections are such that they extend to the fastening apertures during the fastening step. Fastening projections and fastening apertures may be provided both to the fastening edge and the universal chassis. The goods has one or several foldable edge bases connected to the lower part of the wall, the bases containing mounting apertures corresponding to the fastening projections.

During the fastening step, the goods are lowered to the universal chassis so that the edge bases of the goods are folded below the fastening edges of the fastening base. The fastening edges are then folded onto the edge bases.

5 According to an object of the invention, the fastening projections are placed to the fastening apertures and the mounting apertures for the goods.

According to an object of the invention, the fastening base is fixedly attached to the universal chassis. This has e.g. the advantage that it makes the universal chassis more solid.

10 According to an object of the invention, the fastening base is detachably attached to the universal chassis e.g. by means of the base projections and base apertures of the fastening base and universal chassis.

The goods can contain foldable edge bases advantageously on two sides only and, respectively, the fastening base has foldable fastening edges on two sides only.

15 The universal chassis of the invention can be reused many times. The assembly and disassembly of the universal chassis is fast as it is not necessary to pull out nails, bolts, or other similar fixed fastening means. The dimensioning of projections and apertures is suitably done so that they will not be stuck with each other.

20 The height of the projection fastening element is equal to or smaller than the thickness of the fastening base or the base of the goods. In this case, the projections will not form any protrusions to the upper surface of the fastening base as the fastening base is attached to the universal chassis so that the universal chassis will have an even bottom. The height of the projection fastening element is bigger than the thickness of the fastening base and the base of the goods. In this case, the  
25 projections form protrusions to the upper surface of the fastening base. In certain embodiments, these can be used e.g. in the fastening of goods to prevent the goods from moving during transport.

According to an object of the invention, the universal chassis also has one or several of the following elements attached either detachably and/or fixedly:

- 30
- a brake,
  - a supporting part,
  - a mounting aperture for the supporting part; locking element for the supporting part,

- a height adjustment element for the supporting part,
  - a position adjustment element for the supporting part,
  - an edge fastening element for attaching the fastening edge to the universal chassis,
- 5
- a mounting aperture for the goods,
  - an edge fastening element for attaching the fastening edge to the universal chassis,
  - an intermediate base fastening element for attaching the detachable intermediate base to the universal chassis.
- 10
- These technical characteristics diversify further the use of the universal chassis in the fastening and handling of goods.

According to an object of the invention, the universal chassis has one or several supporting parts. The universal chassis of the invention can be advantageously provided with wheels. A universal chassis with wheels is easy to move. Part of the wheels in the universal chassis may rotate in relation to their mounting shaft and part of the wheels may be locked, which helps the handling. The wheels can also be of different sizes in pairs. For example, big and bearing wheels can be used in the front and small wheels in the back, the turning of which is easier. In certain embodiments, e.g. universal chassis provided with big wheels can be used.

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According to an object of the invention, the universal chassis has one or several mounting apertures for the supporting part for inserting the supporting part when universal chassis are piled on top of each other. According to an object of the invention, the mounting aperture for the supporting part operates as a goods fastening element at the same time. In this case, the goods can be provided with a fastening element corresponding to the mounting apertures for the supporting part.

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This fastening element can be either fixedly attached to the goods, or it can be a separate additional or intermediate part.

According to an object of the invention, the universal chassis has one or several locking elements for the supporting part. According to an object of the invention, the supporting part has a detachable wheel. In this case, the supporting part can be provided with wheels, when needed; this has the advantage that the manufacture of the universal chassis can be simplified, because no separate versions with or without wheels will be needed for a universal chassis frame. A detachable wheel solution can be e.g. such that the wheels are attached to the supporting part of the universal chassis by means of a detachable and locked shaft.

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According to an object of the invention, the supporting part has a wheel, the mounting height of which is adjustable. The wheel can advantageously be mounted at least to two heights in the supporting part so that in the lower position, the universal chassis is on the floor on wheels and, in the upper position the universal chassis is on the floor resting on the fixed part of the supporting part. In this case, the supporting part has at least an upper mounting element and a lower mounting element. Such a base can be easily provided with a detachable wheel, because in the upper position of the wheel the universal chassis does not rest on the wheels.

10 The upper surface of the supporting part can advantageously have a mounting aperture for the supporting part, through which the wheel can be lowered to the supporting part and locked to the upper position e.g. by means of a detachable and locked shaft. In this case it is advantageously possible to manufacture a universal chassis, the clear lifting space upon piling the universal chassises on top of each other is advantageously dimensioned according to the smallest height of pallet trucks, stacking carriages, forklifts and other forks. The clear space of the chassis can then be e.g. 95 – 110mm in the second position of the wheels.

The adjustability of the supporting part can further be diversified so that a separate elevation element can be connected to it. This elevation element can operate as an intermediate fastening part when it is attached to the goods.

The chassises can be piled tightly on top of each other, when the height and the structure of the frame for the universal chassis have been selected in a suitable manner. They will then take up as little space as possible, and they are also easy to move. The operating height of the goods can be varied by using one or several superimposed universal chassises.

The chassis and the goods can have extra apertures for lightening the structures and for facilitating the mounting. The structure and shape of the universal chassis can be chosen according to the use. The frame for a universal chassis can be reinforced or lightened, and it can be filled or hollow.

30 The sizes for the chassis and fastening bases can be selected according to the standard sizes of the goods so that the use of the method can easily be extended to concern other goods than e.g. special boxes. The shape, number and location of apertures and projections can be selected according to the embodiment used.

The projections and/or apertures for the chassis and the fastening base can be selected so that they are located as mirror images. In this case the goods can be inserted to place in two directions. On the other hand, the goods can have mounting apertures so that it can be inserted to the universal chassis in two directions. This will simplify the use of the universal chassis. In a square universal chassis, all sizes of the fastening base and the corresponding parts of the universal chassis can be symmetrical with each other so that the fastening base can be mounted arbitrarily in the direction of all sides.

According to an embodiment, the apertures and projections can be located asymmetrically in the universal chassis so that the fastening base can be mounted to the universal chassis in one direction only.

The length of the projections can be chosen in accordance with the use. The projections can extend e.g. through the base of the universal chassis frame. The projections can e.g. extend to the respective apertures only partly. The projections can be hollow. The projections can be shaped in a wedge-like manner. For example, it is possible to manufacture a fastening base, the hollow and wedge-like projections can be nested in relation to each other. It is also possible to manufacture a fastening base, the projections of the uppermost fastening base going inside the lower fastening base frame when piling them on top of each other.

Also the fastening base can have apertures, which lighten the structures. Part of the locations for the apertures can be chosen so that they correspond to the locations for the projections as mirror image. In this case, by choosing the length of the projections to be e.g. the same as or smaller than the thickness of the fastening base plate, also they can be piled on top of each other by alternating the mounting direction.

The thickness and material for the fastening base may vary. The fastening base can be, for example, a disposable cardboard sheet, to which suitable projections have been produced by folding them from a cardboard sheet. It can also be, for example, a sheet made of recyclable plastic, to which separate fastening projections have been attached.

The base may advantageously have a rim, and it can be used only as a setting plane. The rim of the universal chassis can thus be shaped, such as oblique so that universal chassis can be tightly superimposed. The rim can consist of one or several parts.

The goods and its parts can be made of different materials. According to an object of the invention, cardboard with a thickness of 5 – 10mm is used in the goods. Preferably the goods contain cardboard with a thickness of 6 – 8mm, such as 7mm. When using cardboard, the goods can be made light but simultaneously solid. It is also easy to collapse and assemble the cardboard parts.

According to an object of the invention, the wall of the goods, such as a box, is partly open for facilitating the fastening of the goods and the universal chassis. It can have, for example, a service aperture. The service aperture can be a separate aperture, or e.g. part of a wall, which is detachable or openable, can operate as a service aperture. The wall of the goods can advantageously be open for the whole height so that fastening is especially simple and fast.

According to an object of the invention, the projections have fastening elements for attaching the fastening base and the goods to the universal chassis. The fastening elements then attach to the apertures in the universal chassis. The fastening element can advantageously be a flexible fastening claw, which attaches the projection to the base of the universal chassis. The fastening claw can be shaped so that it loosens its grip when raising the fastening base and/or pushing the projection. The fastening claw can also be pressed open. The fastening element can also be, for example, a wing nut or a wing bolt, which is twisted to threads at the end of the projection. The fastening element can also be a fastening sleeve, lock pin, wire or bar, which is placed to the projection.

According to an object of the invention, the fastening base can have transfer elements for facilitating the transfer, such as lifting or lowering, of the fastening base. The transfer element can advantageously be a lifting aperture in the frame or at the rim of the fastening base, which structurally also lightens the fastening base at the same time. The transfer element can also be e.g. a lifting handle, lifting edge, or lifting slot.

According to an object of the invention, the goods have gripping elements for facilitating the transfer. The gripping element can advantageously be a gripping aperture. The gripping element can also be e.g. a gripping handle, a gripping rib or a gripping slot. The transfer elements can advantageously be such that a packing strip used in the closing of the goods can be connected to it.

The goods and the universal chassis can include identification information and/or use information. The information can be, for example, product information, meas-

ure information, a logo, an advertisement, contents information, or handling information. Such information can be e.g. printed or glued.

Colours of the parts, especially the universal chassis and goods, can also be used for identification, which can facilitate the sorting. Colour can also be used as a well  
5 distinguishable advertisement.

### **Detailed description of the invention**

Some embodiments of the invention will be explained next in more detail, referring to the drawings, in which

10 Figure 1 is a cross-sectional top view of a universal chassis according to the invention;

Figure 2B illustrates a universal chassis with fastening rails on the surface of the base part;

Figures 3 and 4 illustrate universal chassis piled on top of each other;

Figure 5 illustrates a universal chassis with an intermediate fastening part,

15 Figure 6 illustrates a universal chassis with a fastening edge,

Figure 7B illustrates a fastening lid for fastening boxes;

Figure 8 illustrates mounting slots, to which rack walls have been attached;

Figure 9 illustrates a universal chassis with fastening rails on the surface of the base part and with a box attached to the rails;

20 Figure 10 illustrates a universal chassis with fastening rails attached to the side fastening element of the base part and with a box attached to the rails;

Figure 11 illustrates a universal chassis with fastening rails attached to the fastening hole of the base part and with a box attached to the rails.

25 The universal chassis 1 according to Figure 1 has a base part 10 comprising a mounting slot 2, a fastening link as a side fastening element 3 in the lateral direction of the universal chassis 1, a fastening hole 4, and a mounting slot 5, a bridge 15 as a supporting part 6, and a fastening aperture/mounting aperture 9 for the supporting part. In the section C-C there is further shown an alternative, in which a

cone support 16 operates as the supporting part 6, leaving the base parts 10 free from each other upon piling them on top of each other.

5 The surface of the universal chassis 1 in Figure 2 has fastening rails 200, which are connected to the base part 10 by means of fastening holes 4. The fastening rails 200 have a mounting slot 201 for the mounting of goods, such as box walls. A V fold is advantageously inserted to the mounting slot, the fold being detachable from the fastening rails 200 via the aperture 202.

10 Figures 3 and 4 illustrate universal chassis 1 piled on top of each other. In Figure 3, the base part 10 has a conical support 17 provided with wheels 14, which separates the base parts 10 from each other upon piling. In Figure 4, the base part 10 has a conical support 18, which lowers the base parts 10 to be in joint connection with each other during piling.

15 In Figure 5, a box 99 is attached to the base part 10 of the universal chassis 1 by means of a detachable intermediate fastening part 98. The intermediate fastening part 98 can be attached to the goods 99 and to the universal chassis 1. The base part 10 has a conical support 18 and a fastening aperture/mounting aperture 9 for the supporting part, which lowers the intermediate fastening part 98 to contact the base 10. The intermediate fastening part 98 has conical holders, which fit into the fastening aperture 9 of the base part 10 and the conical support 18.

20 In Figure 6, there is shown a universal chassis 1, the base part 10 of which is provided with mounting slots 2, to which adjustable fastening edges 13 have been attached, the fastening edges having mounting planes 12 for lowering the goods. The base part 10 further has fastening apertures 9, which simultaneously operate as mounting apertures for the supporting part.

25 The universal chassis 1 according to Figure 7B has a base part 10, onto which transport boxes 99 have been connected by means of an intermediate fastening part 98; on top of the boxes there is mounted a shaped fastening lid 203, which again is attached by means of fastening belts connected to the fastening holes 4 of the base part 10.

30 On the surface of the base part 10 of the universal chassis 1 of Figure 8 there are provided fastening rails 200 in accordance with Figure 2B, which are attached to the fastening holes 4 of the base part 10 by fastening pins 44. Fastening walls 205, 206 have been mounted to the fastening rails 200 by means of fastening bars 207.

The surface of the universal chassis 1 in Figure 9 has fastening rails 200, which are connected to the base part 10 by means of fastening holes 4 and fastening pins 44. The lower edge of the box 99 is again provided with V folds 208, which attach to the fastening rails 200. The fastening rails 200 have advantageously mounting slots and release apertures in accordance with Figure 2B for mounting and releasing the box.

On the side of the universal chassis 1 according to Figure 10 there are provided fastening rails 200, which are connected to the base part 10 by means of side fastening elements 3. The lower edge of the box 99 is again provided with V folds 208, which attach to the fastening rails 200. The fastening rails 200 have advantageously mounting slots and release apertures in accordance with Figure 2B for mounting and detaching the box.

On the side/lower side of the universal chassis 1 according to Figure 11 there are provided fastening rails 200, which are connected to the base part 10 by means of fastening holes 4 and fastening pins 44. In this embodiment, the fastening rail 200 operates simultaneously as the side fastening element. The lower edge of the box 99 is again provided with V folds 208, which attach to the fastening rails 200. This embodiment takes especially little space, because the fastening rail is mainly located in the area of the base part. The fastening rails 200 have advantageously mounting slots and release apertures in accordance with Figure 2B for mounting and releasing the box.

## Claims

1. Universal chassis for fastening goods (99), the universal chassis having a base part (10, 100), **characterised** in that the base part (10, 100) has one or several following fastening elements attached either detachably and/or fixedly:
- 5           - a mounting slot (2),  
          - a fastening rail (97),  
          - a fastening edge (13),  
          - a side fastening element in the lateral plane of the universal chassis (3),  
          - an intermediate fastening element (98), which can be attached to the goods  
10           (99) and to the universal chassis (1).
2. Universal chassis according to claim 1, **characterised** in that the universal chassis (1) has at least one connection element for connecting the fastening element, the connection element being chosen from the group containing:
- 15           - a fastening hole (4),  
          - a fastening aperture (9),  
          - a connection slot (5),  
          - a fastening link (3),  
          - a clip aperture (4),  
          - a fastening notch.
- 20           - a fastening projection,  
          - a fastening tongue and groove,  
          - a fastening lath,  
          - a fastening pin (44),  
          - a fastening bar,
- 25           - a fastening glide,  
          - a fastening hinge,  
          - a fastening edge,  
          - a fastening lid (203),  
          - a fastening belt (204),
- 30           - a fastening base.
3. Universal chassis according to claim 1 or 2, **characterised** in that the universal chassis (1) has one or several following elements attached to it either detachably and/or fixedly:
- 35           - a brake,  
          - a supporting part (6),  
          - a mounting aperture (9) for the supporting part,

- a locking element for the supporting part,
  - a height adjustment element for the supporting part,
  - a position adjustment element for the supporting part,
  - an edge fastening element for attaching the fastening edge to the universal chassis,
  - an intermediate base fastening element for attaching the detachable intermediate base to the universal chassis.
- 5
4. Universal chassis according to one of the preceding claims, **characterised** in that the goods (99) are provided with a detachable and/or fixed intermediate fastening part (98), which can be attached to the goods (99) and the universal chassis (1).
- 10
5. Universal chassis according to one of the preceding claims, **characterised** in that the opposite edges of the universal chassis (1) are provided with side fastening elements (3), such as mounting slots and tongues and grooves, which are arranged so that two or more universal chassis (1) can be attached to each other.
- 15
6. Universal chassis according to one of the preceding claims, **characterised** in that the base part (10, 100) has at least two elements, such as fastening holes and/or mounting slots that are located crosswise in relation to each other.
7. Universal chassis according to one of the preceding claims, **characterised** in that the universal chassis (1) has one or several side fastening elements (3), which are arranged on the side to a place corresponding to the other elements (5).
- 20
8. Universal chassis according to one of the preceding claims, **characterised** in that the universal chassis (1) has an edge fastening element, which is chosen from the group of a fastening hole, fastening notch, fastening projection, fastening glide, mounting slot, fastening base, fastening lathe, fastening hinge.
- 25
9. Universal chassis according to one of the preceding claims, **characterised** in that base part (10, 100) has one or several mounting apertures (9) for the supporting part for mounting the supporting part (6) when piling universal chassis (1) on top of each other.
- 30
10. Use of the universal chassis according to one of the claims 1 – 9 for attaching a product, box, rack or structural element.

11. Method for manufacturing a universal chassis for the fastening of goods (99), **characterised** in that a base part (10, 100) is provided to the universal chassis so that one or several following fastening elements are connected to the base part either detachably and/or fixedly:

- 5       - a mounting slot (2),
- a fastening rail (97),
- a fastening edge (13),
- a side fastening element in the lateral plane of the universal chassis (3),
- an intermediate fastening part (98), which can be attached to the goods (99)
- 10       and the universal chassis (1).

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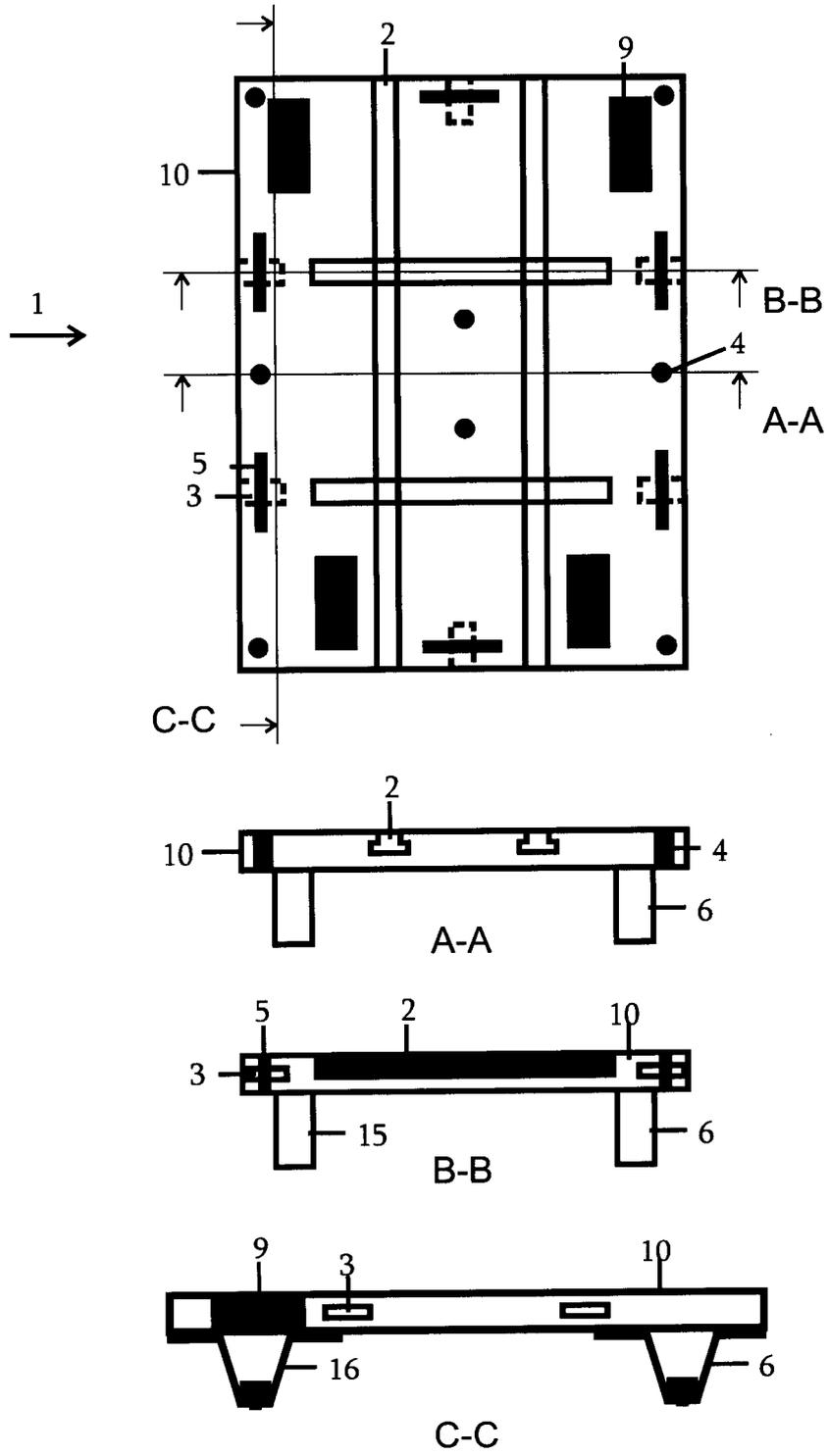


FIG. 1

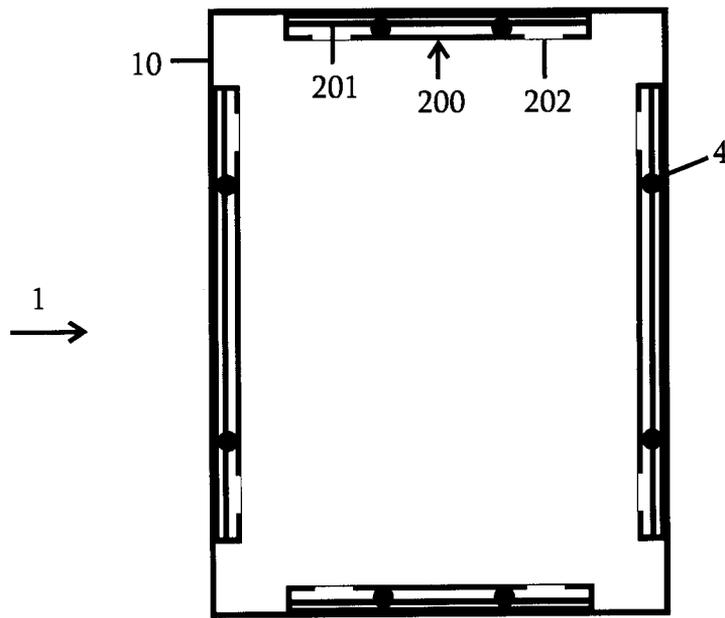


FIG. 2B

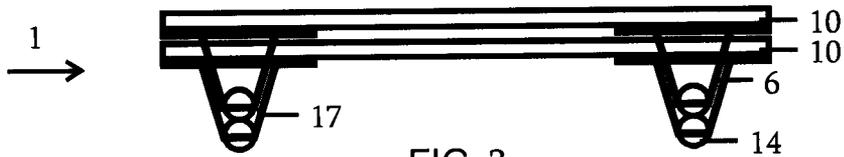


FIG. 3

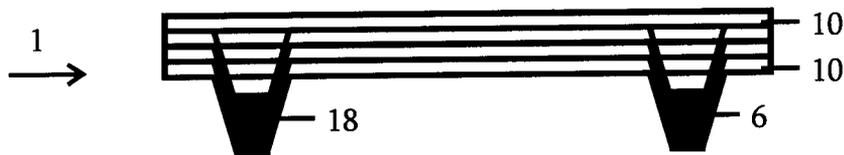


FIG. 4

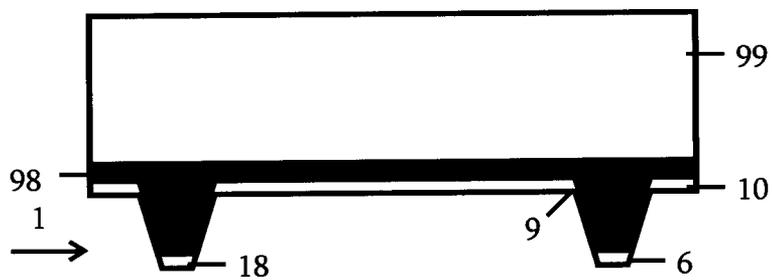


FIG. 5

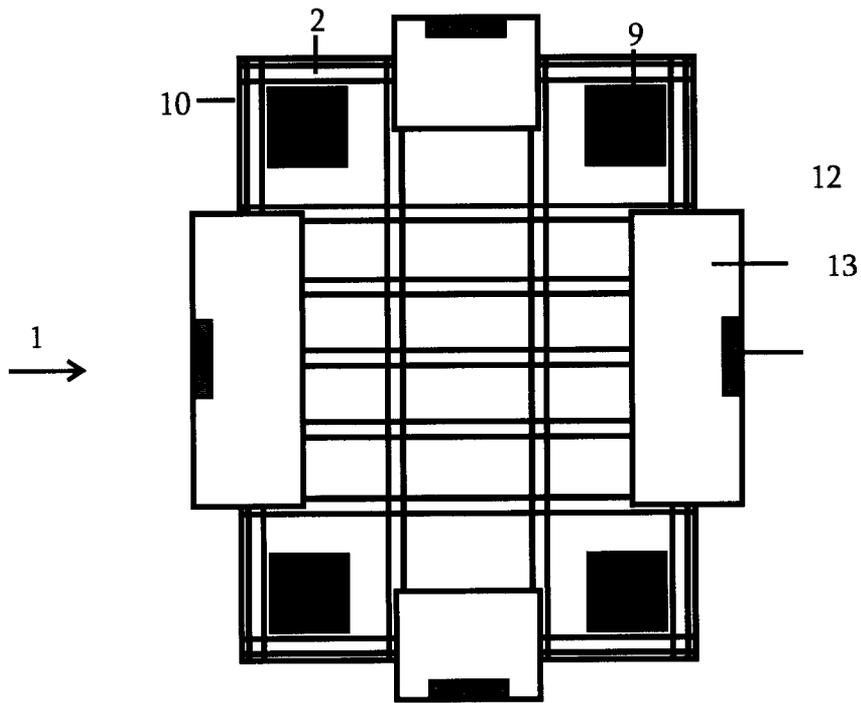


FIG. 6

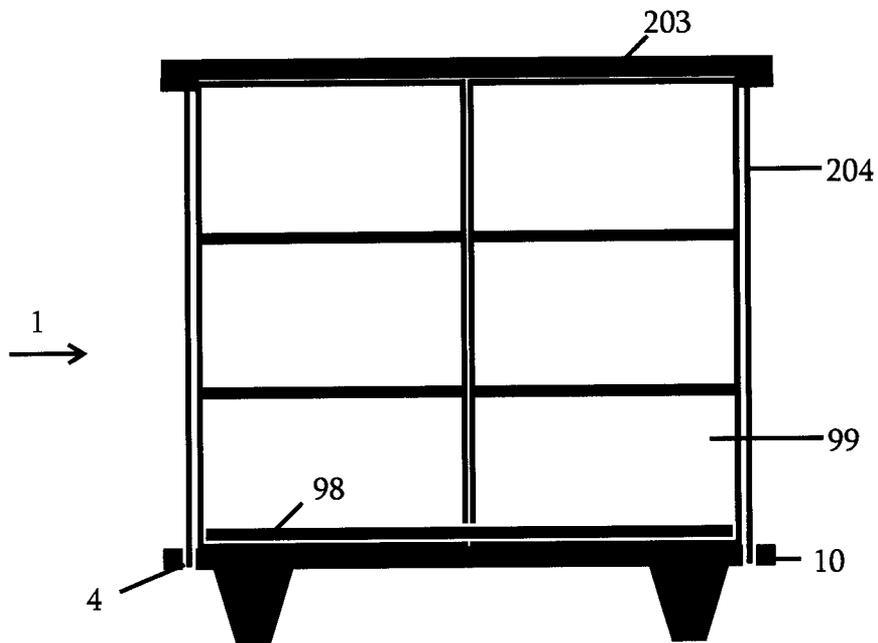


FIG. 7B

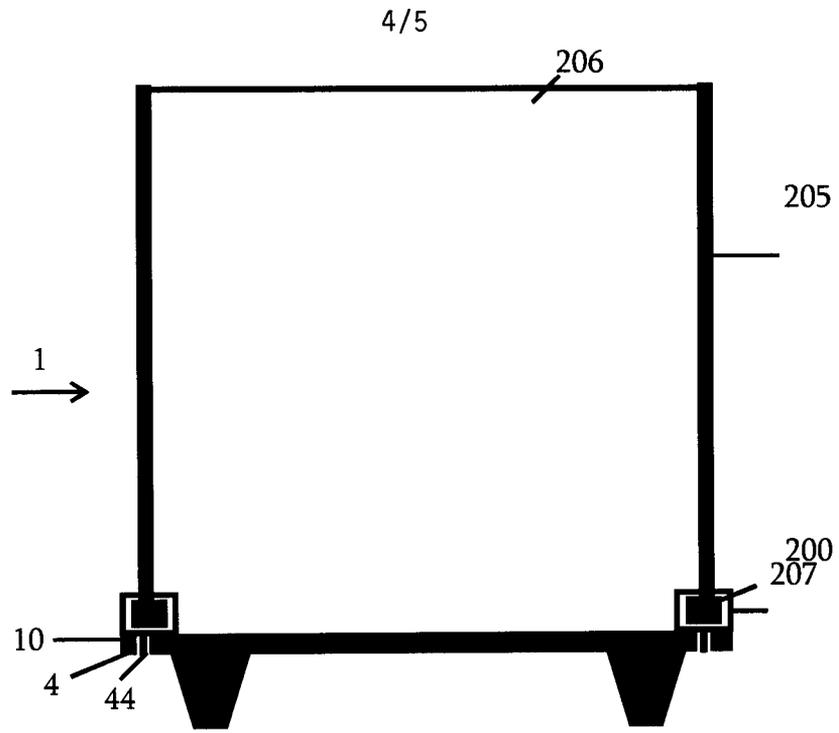


FIG. 8

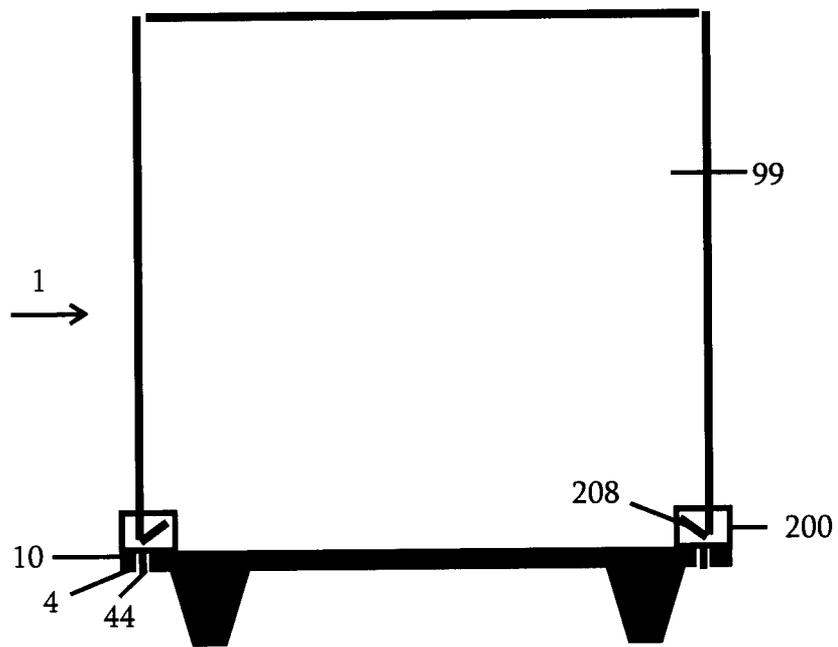


FIG. 9

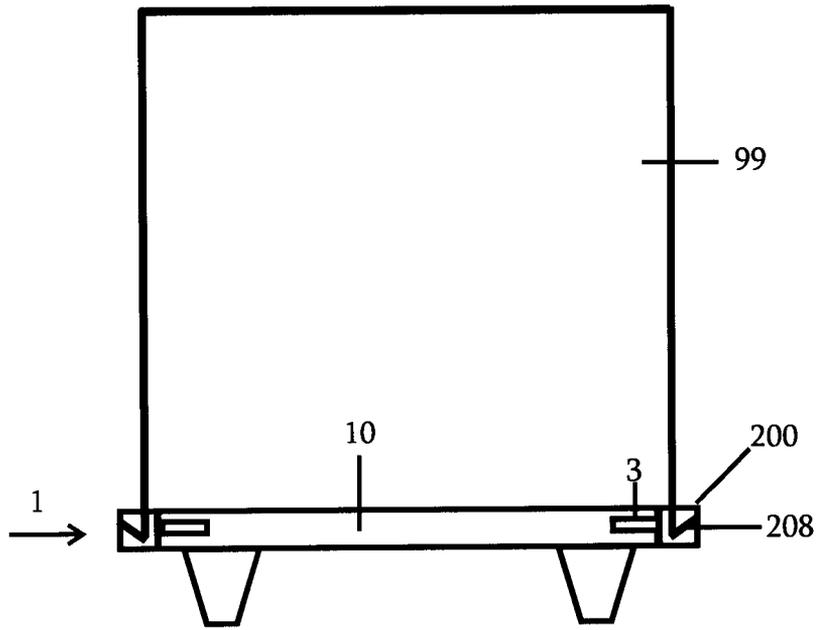


FIG. 10

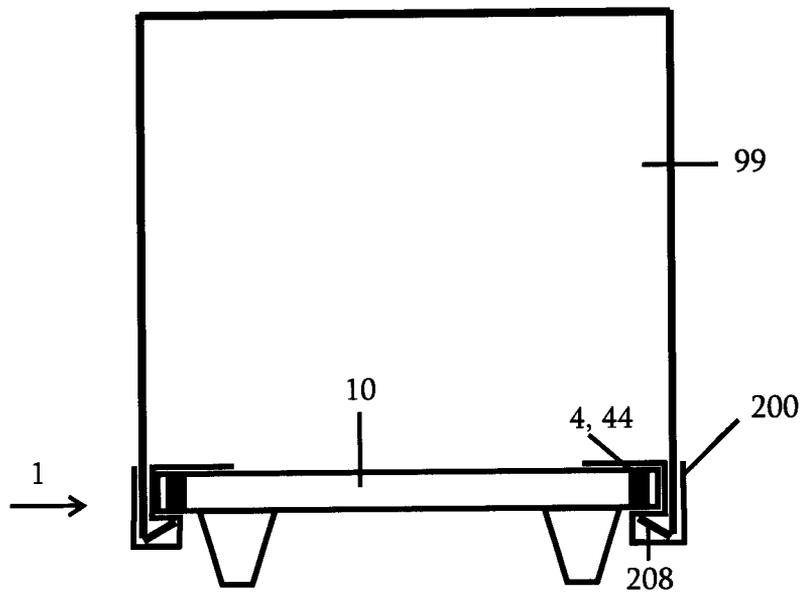


FIG. 11

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2008/050214

A. CLASSIFICATION OF SUBJECT MATTER See extra sheet According to International Patent Classification (IPC) or to both national classification and IPC	
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 8: B65D Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched FI, SE, NO, DK Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI	
C. DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.
X Y	US 4344368 A (REMINGTON JOHN L et al.) 17 August 1982 (17.08.1982) column 4, l. 55-64; fig. 9; column 5, l. 52-68; fig. 14 1 - 3, 8, 10, 11 7, 9
X Y	EP 1547931 A2 (MATSUSHITA ELECTRIC IND CO LTD) 29 June 2005 (29.06.2005) paragraph [0011], fig. 1 1, 3, 8, 10, 11 7, 9
X Y	JP 2000109070 A (TOKYO SHIBAURA ELECTRIC CO) 18 April 2000 (18.04.2000) EPODOC abstract, figs. 1 and 2 1 - 3, 4, 8, 10, 11 7, 9
X Y	EP 1473247 A2 (BOEING CO) 03 November 2004 (03.11.2004) column 8, l. 26-30; figs 1-3 1, 3, 5, 8, 10, 11 7, 9
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.	
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
Date of the actual completion of the international search 23 July 2008 (23.07.2008)	Date of mailing of the international search report 29 July 2008 (29.07.2008)
Name and mailing address of the ISA/FI National Board of Patents and Registration of Finland P.O. Box 1160, FI-00101 HELSINKI, Finland Facsimile No. +358 9 6939 5328	Authorized officer Antti Leinonen Telephone No. +358 9 6939 500

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2008/050214

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CLASSIFICATION OF SUBJECT MATTER

Int.Cl.

**B65D 19/44** (2006.01)

**B65D 19/22** (2006.01)