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(71) Applicant (for all designated States except US): **INTER IKEA SYSTEMS B.V.** [NL/NL]; Olof Palmestraat 1, NL-2616 Delft (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **PERSSON, Bo** [SE/SE]; Vintervägen 7, S-343 37 Älmhult (SE).

(74) Agent: **NØRGAARD, Tage**; Chas. Hude A/S, 33, H.C. Andersens Boulevard, DK-1780 Copenhagen (DK).

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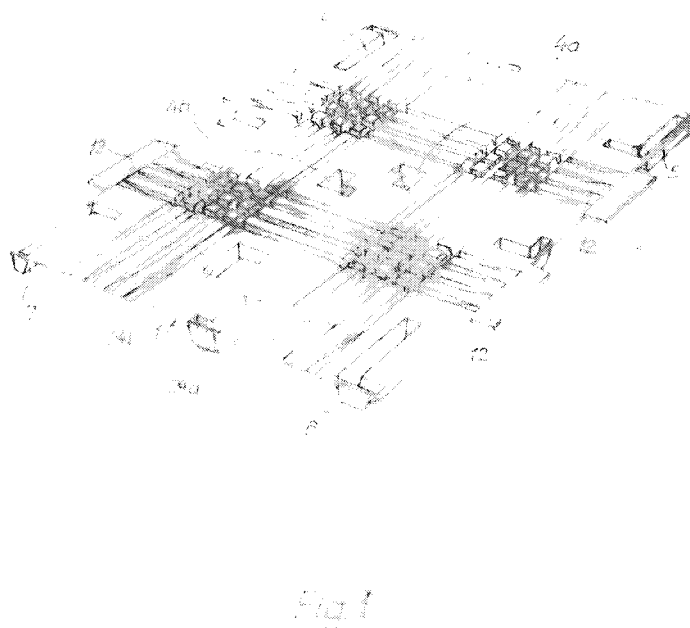
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(54) Title: **LOAD PROTECTION PANEL FOR PLACING UNDERNEATH AND/OR ABOVE PACKED GOODS OR GOODS PORTION TO BE TRANSPORTED ON A LOAD CARRIER**



(57) Abstract: Load protection panel (1) for placement underneath and/or above goods or a goods portion, which may be packed and is to be transported on a load carrier (2). The load protection panel has some support feet (4a, 4b; 14a, 14b; 24a, 24b), support projections respectively, on its lateral surface (3) turning away from the goods. Said lateral surface (3) has a number of ribs (9a, 9b, 9c) between which there are outwardly open channels (16, 17) for reception of one or more circumferential relatively narrow packaging means (11), such as metal strips or straps. Said packaging means may be led around the load protection panel and the goods - potentially two load protection panels. The support feet, potentially the support projections, are placed in pairs. The support feet, potentially the support projections, of the individual pair have substantially the same size. An "outer cavity" on a support foot/support projection in the individual support foot pair or support projection pair is diagonally and directly opposite an "outer cavity" on the second foot in said support foot/support projection pair. There are bendable webs (12) at the edges (20) of the load protection panel at the end of one or more of the said channels (16, 17), which can protect against the narrow packaging means rubbing against one or two load protection panels (1) and the goods. As

a result, it is achieved that the load protection panel, potentially the load protection panels and the goods thereon, will provide increased guarantee against sliding in relation to the load carrier (2), even though the latter is relatively tilted.

Title: Load protection panel for placing underneath and/or above packed goods or goods portion to be transported on a load carrier

Technical Field

The invention relates to a load protection panel for placement underneath and/or above goods or a goods portion, which may be packed, and which is to be transported on a load carrier, said load protection panel being provided with vertical support feet, support projections respectively, on its lateral surface turning away from the goods, and where said lateral surface has a number of ribs between which there is at least one channel for reception of one or more circumferential relatively narrow packaging means such as metal strips or straps, which may be led around the load protection panel/panels and *inter alia* said goods etc.

Background

A pallet provided with feet for transportation of goods is known in the art. When pallets with goods are stacked on top of each other, it is a problem of said pallet that the feet of an overlying pallet may result in pressure marks on the goods on an underlying pallet. In addition, the feet are spread across the bottom surface of the pallet. If, when there are goods placed on said pallet, it is tilted and secured on a surface there is a risk that the goods will slide on the pallet, which is obviously undesirable.

Disclosure of the Invention

The object of the present invention is to provide a load protection panel of the above type, which enables that the goods are less liable to slide in relation to the load carrier, even if the latter is relatively tilted.

The load protection panel according to the present invention is characteristic in that the support feet/support projections, being substantially L-shaped, are placed in pairs and in that the support feet/support projections of the individual pair have substantially the same size, in that an "outer cavity" on a support foot/support projection in the individual support foot pair or support projection pair is diagonally and directly opposite an "outer cavity" on the second foot in said support foot/support projection pair, said support foot pair being able to interact with each its cut-out in the top surface of the load carrier, and in that said channel or channels on the lateral surface turning away from the goods is/are open, and in that there are bendable webs at the edges of the panel at the ends of said channel or channels. As a result, the goods on their load protection panels are

less liable to slide in relation to the load carrier even if the latter is quite tilted. The support foot pairs on the bottom load protection panel will namely be able to project down into said cut-outs in the top surface of the load carrier, such that it is very difficult for said load protection panel or panels incl. goods (the load protection panel or panels and the goods being tied together by means of the circumferential packaging means, such as metal strips or straps) to slide away from each other or from the load carrier.

According to the invention, the webs may have on more upwardly pressed areas in one of their large surfaces. As a result, the relatively narrow packaging means are kept at a distance from the goods if the goods are placed right at the edge of the load protection panels, such that said packaging means do not damage the goods accidentally.

According to the invention, the load protection panel may further have at least two open channels comprising narrow packaging means such as metal strips or straps, intersecting each other at an angle of substantially 90°. As a result, an especially efficient packing of the goods to be placed on the load carrier is achieved.

According to the invention, at least some of said ribs delimiting said channels may be bevelled in the direction towards a lateral edge of the panel. Thereby, a considerable save on material is achieved.

According to the invention, close to the L-shaped support feet on the surface of said panel turning away from the goods, there may be one or more small protuberances with a small height compared to the height of the L-shaped support feet, preferably with a height smaller than 0.25 times the height of the L-shaped support feet, more preferably smaller than 0.15 times the height of said support feet. This enables an additional stabilisation of the individual load protection panel against undesirable sliding when the panel incl. goods are placed on a sloping surface.

According to the invention, there may advantageously be one or more antiskid coatings or edge-like projections on the free end of the L-shaped support feet/L-shaped support projections.

Further according to the invention, a relatively large in all essentials L-shaped auxiliary projection may be placed at each of the two corners of the panel, which are diagonally opposite each other, where the long web on the auxiliary foot/auxiliary projection has a

length of at least approx. 2.5 times the length of the long web on the support foot/support projection, whereas the short web on the auxiliary foot/auxiliary projection has a length at least 1.4 times the length of the short web on the support foot/support projection. As a result, a stabilisation is achieved preventing undesirable sliding of the load protection panel with goods in relation to the load carrier, if the latter is considerably tilted.

Furthermore according to the invention, the load carrier used may have a number of longitudinal depressions in its top surface adapted so as to interact with at least one pair of substantially L-shaped support feet on the load protection panel. As a result it is achieved that an especially simple and reliable connection between the load protection panel and the load carrier can be provided.

In addition according to the invention, a central upwardly protruding part, preferably a wall-shaped part, may be placed in a longitudinal depression in the top surface of the load carrier when a bottom load protection panel loaded with goods has been placed on the top surface of the load carrier, said centrally upwardly protruding part being able to project into "the cavity", which is defined between a pair of support feet in the individual support foot pair (on the bottom surface of the load protection panel). As a result, an especially reliable connection is achieved between the load carrier and the load protection panel with goods placed thereon. Thus, it is *inter alia* achieved that the load protection panel cannot let go of its grip in the longitudinal depression or depressions in the top surface of the load carrier, not even when the load protection panel and the load carrier are very tilted (e.g. up to 27°). Thus, the load protection panel with goods will remain unmoved on the load carrier.

Finally according to the invention, in a relatively small distance from the edge of said panel, there may be a circumferential groove in the surface of the load protection panel turning towards the goods or the goods portion, and in said groove as well as in a similar groove in a surface of a similar top load protection panel turning towards the goods or the goods portion, a substantially vertical, circumferential wall panel part for protection of the goods or goods portion is mounted by insertion and seizure or glueing. As a result, it is achieved that the goods or the goods portion is especially efficiently protected against unfortunate outer impact.

Brief Description of the Drawings

The invention is explained in detail below with reference to the drawings, in which

Fig. 1 shows an embodiment of a load protection panel according to the invention, shown at an angle from above,

Fig. 2 the same shown from the side,

Fig. 3 the same shown at an angle from below,

Fig. 4 shows a goods portion provided with an top load protection panel and a bottom load protection panel, and where two packaging means in the form of metal strip are led around said parts with 90° angular misalignment,

Fig. 5 shows a vertical sectional view through an L-shaped support foot, showing an edge-like projection at the bottom of the support foot,

Fig. 6 shows a bendable web, which is intended for placement on the load protection panel; the web being shown in perspective view and in a larger scale than in Fig. 1,

Fig. 7 is a perspective view of a load carrier for use in connection with the load protection panel according to the invention, and

Fig. 8 shows a perspective view of part of a load carrier, in which there is a circumferential part wall in the individual depression in the load carrier.

Detailed description of the Invention

The load protection panel 1 shown in Fig. 1 intended for placement underneath goods or a goods portion 10 (see Fig. 4) has on its bottom surface 3 some vertical substantially L-shaped support feet 4a, 4b; 14a, 14b; 24a, 24b. Substantially L-shaped auxiliary feet 5, 6, 7 and 8 are placed at the corners of the load protection panel.

On the bottom surface 3 of the load protection panel 1 there are a number of ribs, partly for support and partly for establishing at least one open channel 16, which may hold one or more relatively narrow packaging means, e.g. metal strips or straps (see below and Fig. 4).

As shown in Fig. 3, the support feet 4a, 4b; 14a, 14b; 24a, 24b are placed in pairs, and the feet of the individual pair have substantially the same size. It is characteristic of the individual support foot pair that an "outer cavity" 4a', e.g. on the support foot 4a, is diagonally and directly opposite an "outer cavity" 4b' on the second support foot 4b in said support foot pair 4a, 4b.

At the edges 20 of the load protection panel 1, bendable webs 12 are placed as shown at the end of the ribs, e.g. 9a-9b. When the panel is loaded with goods and the goods are reasonably secured to the panel 1, the bendable webs 12 can protect the edge 20 of the panel against wear and tear from the said metal strips 11. As shown in Fig. 4, a top load protection panel and a bottom load protection panel may be tied to each goods portion. Several goods portions with appertaining load protection panels may be stacked on top of each other.

As shown in Fig. 6, one of the large surfaces on the individual bendable web 12 may be provided with one or more upwardly pressed areas 13. This is to protect the edge of the panel 1 and the goods placed on the panel as well as their packing against a certain wear and tear from the metal strip 11.

As shown in Fig. 3, the load protection panel 1 may have two channels, e.g. a first channel 16 and a second channel 17 both comprising a metal strip 11, and where the metal strips intersect each other at an angle α of substantially 90° . The metal strips 11 are led around the panel 1 with goods and potential packaging, perhaps also around an (additional) top load protection panel, see. Fig. 4.

In Figs. 1 and 3, it is also shown that the ribs 9a, 9b, 9c and 9d may be bevelled at their end areas 9a', 9b', 9c' and 9d' in the direction towards the edge 20 of the panel 1.

On the bottom surface of the panel 1, one or more small projections 25 with a height h may be provided close to the L-shaped feet 4a, 4b; 14a, 14b; 24a, 24b, the height h being quite small compared to the height H of the L-shaped support feet 4a, 4b; 14a, 14b; 24a, 24b. Preferably, the height h of the small projections is smaller than 0.25 times the height H of the L-shaped support feet. Preferably, h is smaller than 0.15 times H .

On the free end (at the bottom) of the L-shaped support feet 4a, 4b; 14a, 14b; 24a, 24b of the panel 1, one or more antiskid coatings or edge-like projections 18 (see Fig. 5) may be provided, which may help preventing that the panel slides if it is placed on a sloping surface (not necessarily on the load carrier according to the invention).

In each of two corners 27 and 27a of the panel 1 placed diagonally opposite each other (see Fig. 3), a relatively large substantially L-shaped auxiliary foot 7, 5 may, as mentioned above, be placed, and in each of the two other corners placed diagonally opposite each other, a large substantially L-shaped auxiliary foot 6, 8 may also be placed. The long web in an auxiliary foot – e.g. the auxiliary foot 7 – may have a length at least 2.5 times the length of the long web on a support foot, e.g. 14a, 14b. The short web in the auxiliary foot may have length at least 1.4 times the length of the short web on the support foot 4a, 4b; 14a, 14b or 24a, 24b.

The load protection panel according to the invention may be produced by moulding in e.g. plastic.

The embodiment of a load carrier 2 shown in Fig. 7 may be used together with the load protection panel 1 described above, as the load protection panel 1 can be lowered down onto the load carrier 2. In that case, the support foot 7 of the load protection panel 1 (Fig. 7) will be placed in a cavity 25a' in the support foot 25a (Fig. 7), the support foot pair 24a, 24b (Fig. 1) will be lowered down into a cavity 25b' in the support foot 25b (Fig. 7), and the support foot 6 (Fig. 1) will be placed in a cavity 25c' in the support foot 25c (Fig. 7). Correspondingly, the other support feet and support foot pairs will be lowered down into depressions in the top surface of the load carrier 2. The individual depression is shaped so as to reduce, to a considerable extent, the tendency of the individual support foot or support foot pair to be released from the said depression.

As shown in Fig. 8, an upwards protruding, preferably wall-shaped part 30 may be centrally placed in the individual longitudinal cavity 25a', 25b' and 25c' in the top surface of the load carrier 2 – and also in other cavities. When the bottom load protection panel 1 with goods has been placed on the load carrier 2, said upwardly protruding wall-shaped part 30 will be able to project into the "cavity", i.e. the cavity defined between the support feet in the individual support foot pair. Said wall-shaped part 30 may contribute to "hold on to" a load protection panel 1 (with goods fixed to it) lowered down onto the load carrier 2

Fig. 4 shows that a wall panel part 15 may be placed around the goods or the goods portion 10 and between the bottom load protection panel 1 and the top load protection panel, said wall panel part 15 providing a considerable protection for the goods 10 against the impact force from the side. Only a small part of the wall panel part 15 is shown. Normally, this would be led all the way around the goods 10. The part 15 may be fastened to each of the load protection panels 1 by being squeezed down into a circumferential groove 19 close to the edge of the individual panel 1 or by being glued to the said groove. Fig. 4, however, does not show the entire groove 19 or the entire wall panel part 15. It is intended to continue the whole way around along the edge 20 of the load protection panels 1 and normally in quite small distance from said edge.

The load protection panel 1 and the load carrier 2 may be produced by moulding in e.g. plastic or composite materials. It is important that the support feet and support foot pairs placed in the load protection panel 1 enable that the panels 1 (per se) and many load carriers 2 (per se) can be nested on top of each other so that they do not take up too much space when they are not being used.

The invention may be varied in many ways without thus deviating from its scope. Nothing prevents that several goods portions each with one or two load protection panels may be stacked on top of each other on a load carrier. In that case, metal strip(s) 11 is/are also fixed, which is/are common for all the goods and the load protection panels. The metal strips 11 are not led underneath the load panel 1.

Claims

1. Load protection panel (1) for placement underneath and/or above goods or a goods portion, which is possibly packed, and which is to be transported on a load carrier (2), said load protection panel provided with vertical support feet (4a, 4b; 14a, 14b; 24a, 24b), support projections respectively, on its lateral surface (3) facing away from the goods, and where said lateral surface has a number of ribs (9a, 9b, 9c) between which there is at least one channel (16, 17) for reception of one or more circumferential relatively narrow packaging means (11) such as metal strips or straps, which may be led around the load protection panel/panels and said goods, **characterised in** that the support feet/support projections (4a, 4b; 14a, 14b; 24a, 24b), being substantially L-shaped, are placed in pairs and in that the support feet/support projections of the individual pair have substantially the same size, in that an "outer cavity" on a support foot/support projection in the individual support foot pair or support projection pair is diagonally and directly opposite an "outer cavity" on the second foot in said support foot/support projection pair, said support foot pair being able to interact with each its cut-out in the top surface of the load carrier, and in that said channel or channels (16, 17) on the lateral surface (3) turning away from the goods is/are open, and in that there are bendable webs (12) at the edges (20) of the panel (1) at the ends of said channel or channels (16, 17).
2. Load protection panel according to claim 1, **characterised in** that the webs (12) have on more upwardly pressed areas (13) in one of their large surfaces.
3. Load protection panel according to claim 1 or 2, **characterised in** that it has at least to open channels (16, 17) comprising narrow packaging means (11) such as metal strips or straps intersecting each other at an angle (α) of substantially 90°.
4. Load protection panel according to claim 1, 2 or 3, **characterised in** that at least some of said ribs delimiting said channels are bevelled (9a', 9b', 9c', 9d') in the direction towards a lateral edge (20) of the panel (1).
5. Load protection panel according to one or more of the claims 1-4, **characterised in** that close to the L-shaped support feet (4a, 4b; 14a, 14b; 24a, 24b) on the surface of said panel (1) turning away from the goods, there are one or more small protuberances (27) with a small height (h) compared to the height (H) of the L-shaped support feet,

preferably with a height (h) smaller than 0.25 times the height (H) of the L-shaped support feet, more preferably smaller than 0.15 times the height (H) of said support feet.

6. Load protection panel according to one or more of the claims 1-5, **characterised in** that there are one or more antiskid coatings or edge-like projections (18) on the free end (21) of the L-shaped support feet/L-shaped support projections (4a, 4b; 14a, 14b; 24a, 24b).

7. Load protection panel according to one or more of the claims 1-6, **characterised in** that a relatively large substantially L-shaped auxiliary foot/auxiliary projection (5, 6) is placed at each of the two corners of the panel (1), which are diagonally opposite each other, where the long web on the auxiliary foot/auxiliary projection has a length at least approx. 2.5 times the length of the long web on the support foot/support projection (4a, 4b; 14a, 14b; 24a, 24b), whereas the short web on the auxiliary foot (5, 6) has a length at least 1.4 times the length of the short web on the support foot/support projection (4a, 4b; 14a, 14b; 24a, 24b).

8. Load protection panel according to one or more of the claims 1-7, **characterised in** that the load carrier (2) used has a number of longitudinal depressions (40) in its top surface adapted so as to interact with at least one pair of substantially L-shaped support feet (4a, 4b; 14a, 14b; 24a, 24b) on the load protection panel (1).

9. Load protection panel according to claim 8, **characterised in** that a central upwardly protruding part (30), preferably a wall-shaped part, is placed in a longitudinal depression (40) in the top surface of the load carrier when a bottom load protection panel (1) loaded with goods has been placed on the top surface of the load carrier, said central upwardly protruding part (30) being able to project into "the cavity", which is defined between a pair of support feet in the individual support foot pair (4a, 4b; 14a, 14b; 24a, 24b).

10. Load protection panel according to one of the claims 1-9, **characterised in** that in a relatively small distance from the edge (20) of said panel there is a circumferential groove (19) in the surface of the load protection panel (1) turning towards the goods or the goods portion (10), and in that in said groove as well as in a similar groove in a surface of a similar top load protection panel turning towards the goods or the goods por-

tion, a substantially vertical, circumferential wall panel part (15) is mounted by insertion and seizing or glueing.

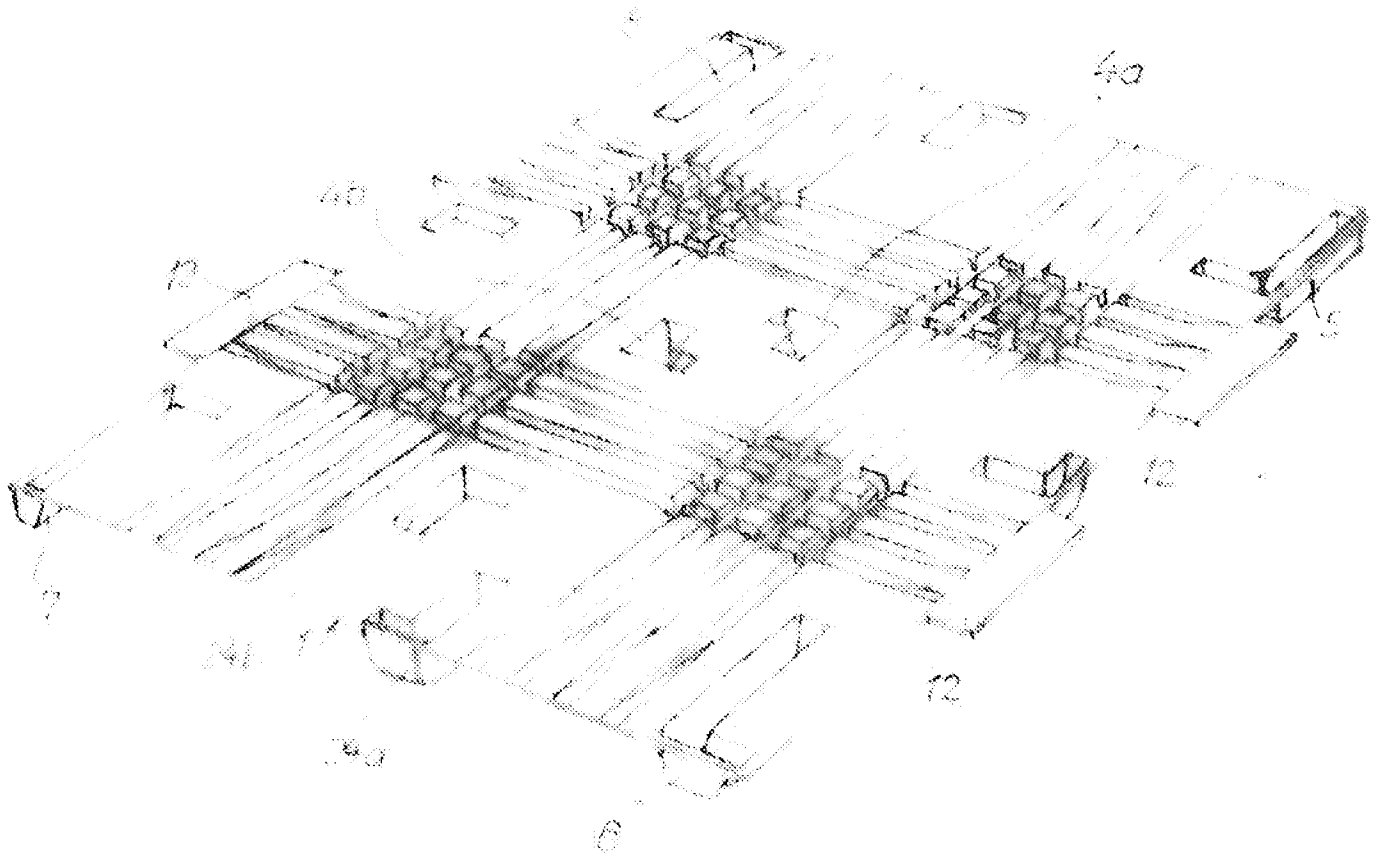


Fig. 1



Fig. 2

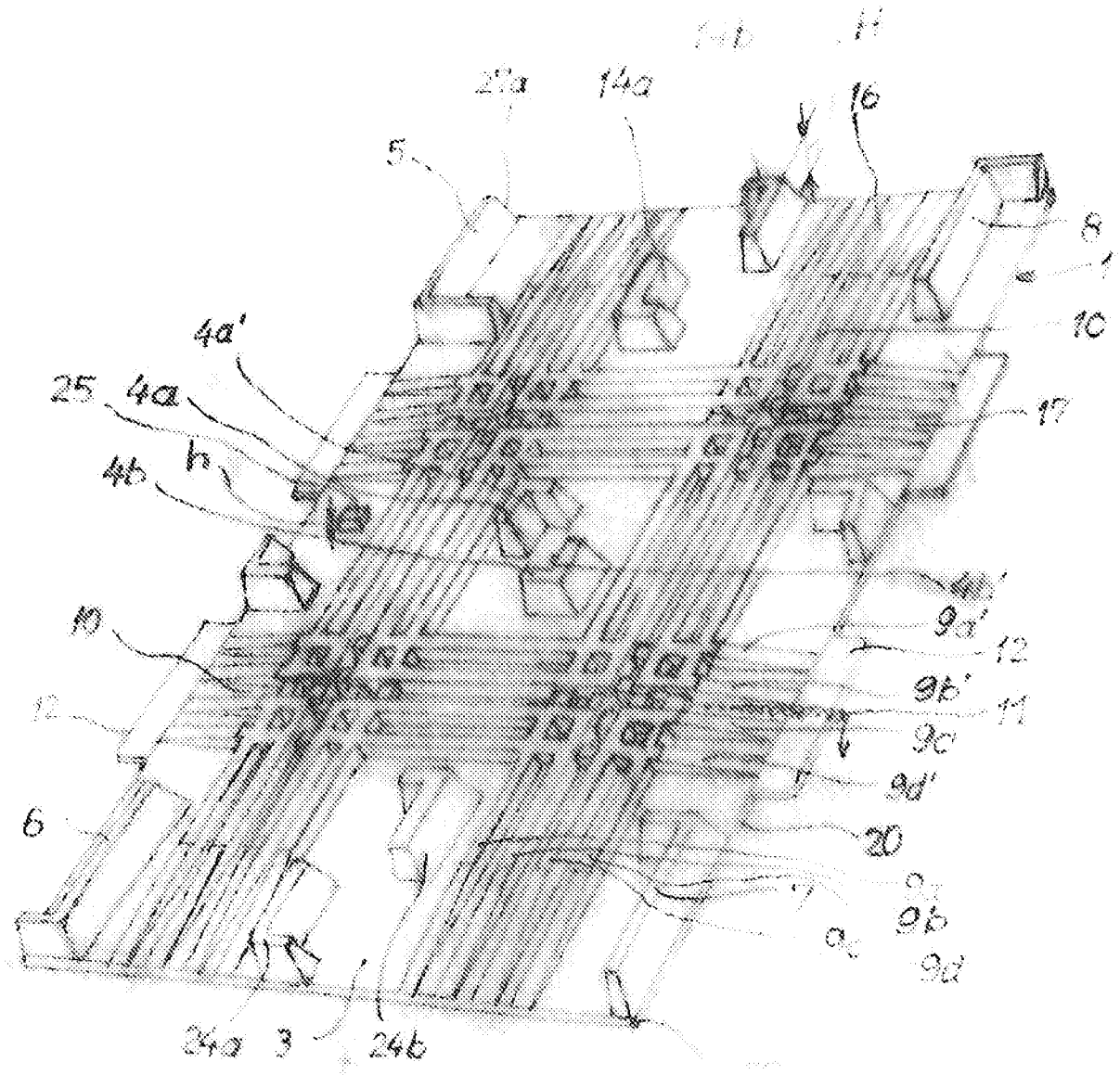


Fig. 3

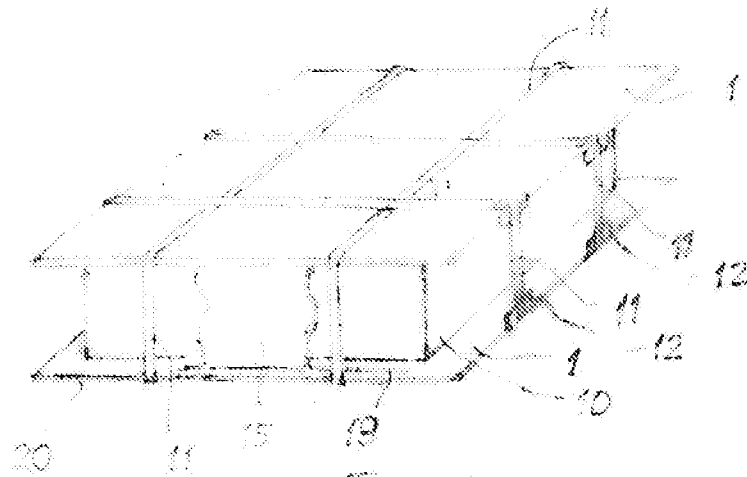


Fig. 4



Fig. 5



Fig. 6



Fig 7

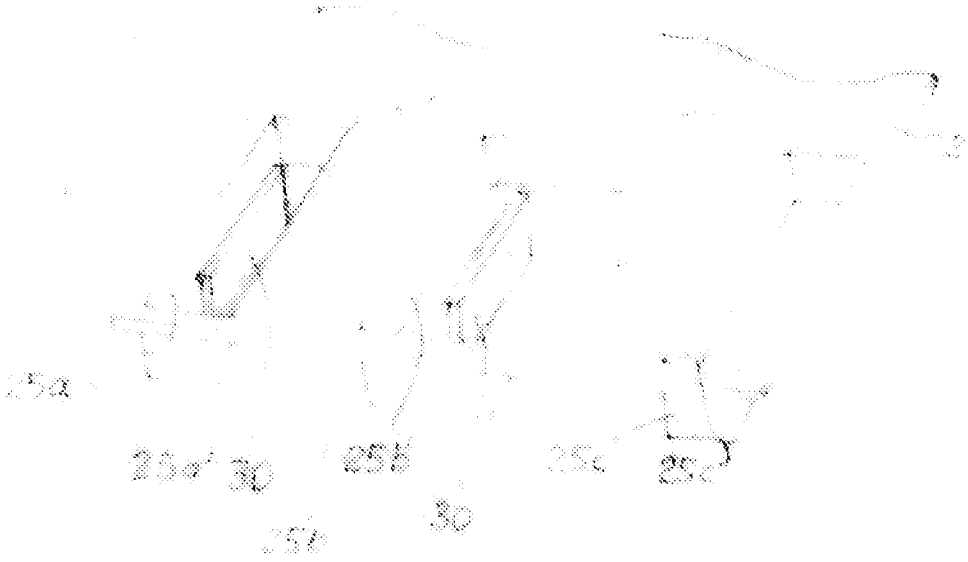


Fig 8