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(71) Applicant: **HOLMBERG, Torbjörn** [SE/SE]; Örviksvägen 13, S-932 33 Skelleftehamn (SE).

(72) Inventor; and

(71) Applicant : **HOLMBERG, Anders** [SE/SE]; Lästängsvägen 38, S-746 93 BÅLSTA (SE).

(74) Agent: **URBAN, Johansson**; Mycklingsvägen 6, S-894 30 Sjölevad (SE).

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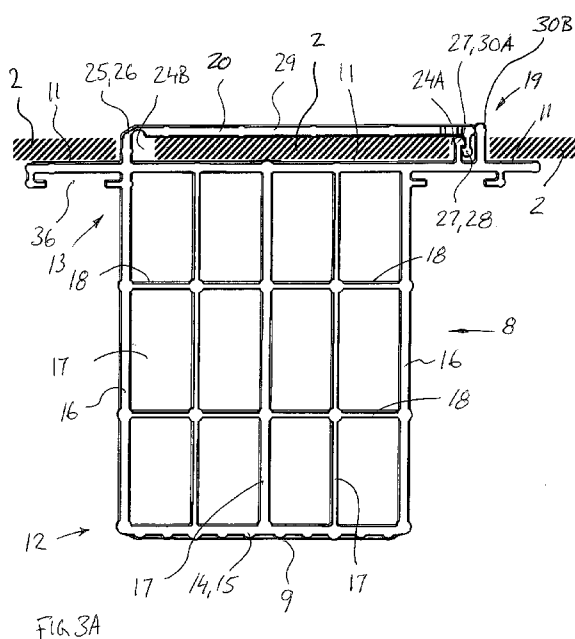
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(54) Title: PALLET SYSTEM AND USE OF SUCH A SYSTEM



(57) Abstract: Pallet system (1) intended for the movement and storage of goods including at least one packaging (2) and at least one first base supporting spacer block (4) and preferably several base supporting spacer blocks (4, 5, 6, 7) which are intended to be connected to packaging (2), which is comprised of at least one material layer. Unique to the present system is that the base supporting spacer blocks (4, 5, 6, 7) are comprised of at least one first surface contact part (9) which is intended to be connected to the underlying surface (10) and at least one second surface contact part (11) intended to be connected the packaging (2) and at least one of the first surface contact part (9) and the second surface contact part (11), intermediate spacer part (8), the surface contact part (11) towards the packing (2) comprised of at least one first connecting assembly (19) and at least one second connecting assembly (20) which are intended to be connected to the packaging (2) by at least one first opening (24), hole, slot or the like, and connect to the packaging (2) by at least one second opening (24), hole, slot or similar.

Field of the Invention

The present invention relates to a pallet system comprised of at least one base supporting spacer block and at least one type of packaging in accordance with the claims. The present patent application also includes a method for using the pallet system.

Background of the Invention

In conjunction with movement of cargo (freight, goods) and the like, there exist several problems with transporting and storing goods in a safe and cost effective manner without the goods being significantly damaged. One problem is that it may be difficult to move boxes, packages (packets), or the like if these are for example placed directly on a floor. Another problem with placing boxes or packages directly on for example a floor is that the boxes or similar and also that which is stored in them may be damaged by fluids and contaminants that may be present on the floor.

One current and common way of transporting and storing goods is to place goods on pallets. With pallets goods are elevated a bit from the floor, the ground or the like which reduces the risk of cargo being damaged from any liquids and contaminants that may be found on the underlying surface. Furthermore, by using a pallet goods may be more easily lifted and moved with a forklift, or other vehicle, which is equipped with forks or similar.

Pallets may be of any type of reusable pallets such as the EUR pallet made of wood. One problem with existing reusable pallets of wood is that they are costly to manufacture. Another problem with reusable pallets of wood is that they absorb liquid (moisture) when subjected to it. A further problem with existing reusable wooden pallets is that these are heavy to handle and that the weight of these may also vary greatly. Another significant problem with reusable wooden pallets is that they may also spread harmful or undesirable insect species (pests).

A further problem with the transportation of pallets and the like is that they are usually shipped empty to the place where goods are to be loaded on them. Another problem with reusable pallets is that they often entail return transport where pallets are shipped without freight. The result is that a large part of the transportation of pallets is carried out without goods which is very cost ineffective. During the transportation of empty pallets such as standard EUR pallets it is also a problem that a large portion of each respective transported pallet's volume is empty space which makes transport of empty pallets cost ineffective. Thus

there exists a need of a pallet system whose included pallets may be efficiency stacked on each other so that gaps are minimized.

Another known way to provide a certain level of elevation for goods, with intent to facilitate the handling of goods and also reduce the risk of goods being damaged by liquids and

5 substances that may be present on the floor (ground etc.), is to place the goods on platforms (or similar) provided with supporting legs, runners, blocks and the like. The supporting legs may be detachably mounted to the platform. One problem with these types of supporting legs is that they need to be fixed to the platform (or goods), for example by them being taped, attached with adhesive materials or the like. This causes problems such as for example that
10 extra labor efforts are necessary.

A further problem exists in conjunction with the transport of goods on different variants of pallets that are relatively narrower than the width of standard EUR pallets. Such a situation exists, for example in connection with shipments of major home appliances and the like. A problem occurs because it is not possible to lift the relatively narrower pallets with forklifts
15 and the like.

Prior Art

Devices for the transport and storage of goods are previously known in numerous different variations. For example, FR2554087 describes a pallet system that includes packaging and base supporting spacer blocks which are connected to the packaging with locking devices.

20 The design has several deficiencies which the present design solves. The system according to its description has the disadvantage that its locking devices risk being damaged by forks when the packaging and spacer blocks are lifted with forklift equipped vehicles. Further, the design according to FR2554087 may hardly be manufactured in the same cost efficient manner compared with the spacer blocks in accordance with the present patent application.

25 FR2765193 describes a variant of a pallet system that includes packaging and base supporting spacer blocks. The design of the base supporting spacer blocks differs to a significant extent from the design in accordance with the present invention.

US5193464 describes a variant of base supports which are intended to be connected to the loading plane (platform) onto which goods and the like are intended to be moved. The design
30 differs to a great extent from the design in accordance with the present application. For

example, the design is not intended to be connected to a layer of material such as cardboard or the like.

Even US5799586 shows and describes a loading platform (plane) with base supports which may be attached and detached from the platform. The loading platform is designed to be used to create a space to move goods with previously known designs. The supports are connected to the platform by a connector being inserted in between at least two layers of materials in the platform. The design differs to a great extent from the design in accordance with the present application. For example, the design is not intended to be connected to a layer of material such as cardboard or the like.

DE2128297 discloses a device with base supports which may be attached and detached from the load platform. The design differs to a great extent from the design in accordance with the present application. For example, the design is not intended to be connected to a layer of material such as cardboard or the like.

US5588374 describes a device with base supports which may be attached and detached from the device. The design differs to a great extent from the design in accordance with the present application. For example, the design is not intended to be connected to a layer of material such as cardboard or similar.

In WO2006/097686 is described a variant of a runner which is intended to act as a spacer between a load bearer and the underlying surface on which it stands. The design differs to a great extent from the design in accordance with the present application.

None of the above mentioned designs resolve all the technical problems that the present pallet system solves.

Brief Description of the Invention Concept

The main purpose of the present invention is to achieve a significantly improved system for handling and transport of goods and the like. Another purpose of the present patent application is to create a pallet which may be cost-efficiently manufactured and used. A further purpose of the present invention is to create a pallet system that is lighter than reusable wooden pallets. Yet another purpose of the present invention is to create a pallet system that reduces the risk of spreading harmful insects and other pests. A still further purpose of the present patent application is to create a method for using the pallet system.

Brief Description of the Drawings

In the following detailed description of the present invention, reference and references to the following figures will occur. These are briefly described in the following figure list. The exemplifying embodiments found in the figures are not limiting for the scope of the present patent application. Note that the figures are schematic and parts therefore may have been omitted in these.

Figures 1 and 2A-AB show exemplifying pallet systems according to a first embodiment of the present patent application.

Figures 3A to 3F show variants of the base supporting spacer block.

Figures 4A and 4B show another alternative embodiment, viewed in perspective from above and also from a side view.

Figures 5A and 5B show exemplifying embodiments of the packaging.

Figures 6 and 7 show a base supporting spacer block connected to the packaging as seen in a cross sectional view from the side.

Figures 8A and 8B show an alternative use of the packaging as a cargo (loading) plane.

Figures 9A to 9D show an alternate embodiment of the present design.

Figure 10 shows loading planes which are stacked on each other.

Detailed Description of the Invention

With reference to the figures, a pallet system **1** (system) in accordance with the present invention is shown. The pallet system **1** is intended to be connected to, or include, at least one type of packaging (one unit) **2**, in which goods and the like are to be placed, in conjunction with the use of systems for storage and transport of goods. The packaging **2** is intended to completely or partially enclose or encircle the goods. The packaging may in its simplest embodiment consist of a loading plane with or without lateral edges or side panels. The packaging **2** may further be comprised of, for example a cardboard box **3** or the like comprised of at least one layer of material. In alternative embodiments, it is conceivable that the packaging **2** may consist of another for the purpose suitable packaging **2**, package, load carrier and the like. The packaging may further comprise at least one second material layer.

The layers of material may be of the same type of material or of different types of materials. Each material layer may consist of two or more kinds of materials.

The system 1 includes at least one first base supporting spacer block 4 intended to connect to the packaging 2. In the exemplifying embodiment of the figures, the system is comprised of at least one first base supporting spacer block 4, at least one second base supporting spacer block 5, at least one third base supporting spacer block 6 and at least one fourth base supporting spacer block 7 connected to the packaging. In alternative embodiments, the number of base supporting spacer blocks may be more or less than four. In an alternative description of the parts of the system, the base supporting spacer blocks 5, 6 and 7 may be defined as a second base supporting spacer block 4, a third base supporting spacer block 4 and a fourth base supporting spacer block 4.

The base supporting spacer blocks 4 - 7 may be made of a variety of conceivable materials. Preferably, the spacer blocks may be made of at least one type of polymeric material such as a plastic material suitable for the purpose. The plastic material may for example be comprised of any type of recycled plastic materials such as fishing nets or other suitable for the purpose recycled material.

In alternative embodiments, the base supporting spacer block 4 may be made of a bio-composite material. The bio-composite material may preferably include plastics and wood meal or other suitable materials. The use of the mentioned material types also has the technical effect of contributing, to a lesser extent, to scratching or damaging the underlying surface.

Each respective base supporting spacer block 4, 5, 6 and 7 is comprised of at least one first spacer part 8 (load supporting segment), at least one first surface contact part (base surface) 9 against the underlying surface 10 and at least one surface contact part (load carrying surface) 11 against the packaging 2. The intended meaning of the term underlying surface is flooring, the ground, shelf planes, another pallet and any other surface (plane, platform) or similar on which each respective base supporting spacer block is intended to support against when the packaging 2, with accompanying base supporting spacer blocks are not lifted up from the underlying surface.

The spacer part 8 is intended in its one end 12 to be connected to, or integrated with surface contact part 9 (which is intended to rest against the underlying surface or the like). At its other end 13 the spacer part 8 connects to, or is integrated with surface contact part 11. Surface

contact part 11 is preferably designed to be connected to the underside of the packaging 2, or to another, suitable for the purpose, position on the packaging.

Surface contact part 9, which is intended to be the contact surface against the underlying surface 10, is preferably provided with at least one surface structure (texture) 14. The surface structure 14 prevents or hinders the goods slipping, sliding or similar against the underlying surface during transport or similar. The surface structure's design may vary greatly within the scope of the present invention. For example, the surface structure may consist of grooves 15 or other type of surface texture suitable for the purpose.

In the exemplifying embodiments of the base supporting spacer blocks, the spacer part 8 is comprised of at least one outer wall 16 and preferably also at least one interior longitudinal wall 17 (inner wall in the spacer part). The interior wall 17 preferably extends from surface contact part 9 to surface contact part 11. The spacer part 8 may also preferably be comprised of at least one intermediate plane (inner plane) 18 or the like extending internally between the walls. The intermediate walls and the planes allow for the design to be both light and stable at the same time. The design also preferably includes an internal transverse wall 17.

With reference to Figures 3A to 3D is shown how each respective base supporting spacer block 4, 5, 6 and 7, preferably in the surface contact part 11 against the packaging 2, includes at least one first connecting assembly 19 and at least one second connecting assembly 20. Each respective base supporting spacer block 4 is connected to the packaging 2 or similar by the connecting assemblies.

In the embodiments shown in Figures 4A and 4B, the base supporting spacer block's surface contact part 11 is comprised of at least one first connecting assembly 19 and at least one second connecting assembly 20 and also at least one third connecting assembly 21. In the exemplifying embodiment, the surface contact part preferably includes at least one fourth connecting assembly 22. With these connecting assemblies each base supporting spacer block is connected to the packaging 2 or the like. In the figure the third and fourth connecting assemblies 21 and 22 are each comprised of at least one from the surface contact part 11 protruding segment 23. In the exemplifying embodiment shown in the figures, segment 23 has a rectangular cross section. The form of the protruding segment 23 may vary greatly within the scope of the present patent application.

In the exemplifying embodiments of the present design, the first connecting assembly 19 and the second connecting assembly 20 and when appropriate further connecting assemblies such

as for example a third connecting assembly 21 and a fourth connecting assembly 22, are each intended to be connected to at least one opening 24 (such as a hole, a slot, an aperture or similar) in the packaging 2. The number of openings 24 (holes, slots) may vary within the scope of protection of the present patent application. Each base supporting spacer block is thus intended to be connected to an array of openings 24 (holes, slots or similar) in the packaging 2. The number of (sets of) openings 24 (holes, slots or the like) may vary within the scope of the invention. In a first embodiment of the present patent application, the connecting assemblies are intended to be connected to the openings from the outside of the packaging 2, such as cardboard or the like.

- 10 Preferably the packaging 2 (such as cardboard 3) has been provided with openings 24 (holes or slots) in conjunction with its manufacture. In alternative embodiments, it is conceivable that the packaging 2 be provided with openings 24 (holes or slots) after its manufacture, but before the base supporting spacer blocks are connected to the packaging 2.

15 Once again referring to Figure 3A, a preferred embodiment of the present base supporting spacer block 4 which is connected to the packaging 2 is shown. The packaging 2 in the shown embodiment in Figure 3A is for example made of cardboard or the like. Each base supporting spacer block includes in its surface contact part 11 against the packaging 2, at least one first connecting assembly 19 and at least one second connecting assembly 20.

20 The base supporting spacer block in the embodiments shown in Figures 3A to 3E is comprised of, in at least one of the connecting assemblies, a hinge (joint, bearing) 25 or the like. The hinge 25 allows the connection assembly, with its associated hinge member, after it has been inserted into a first opening 24, to be folded down against the packaging and fixed to another part of the base supporting spacer block which is completely or partly passed through a second opening 24.

25 The hinge 25 may be comprised of a previously known and suitable for the purpose hinge (joint) or may be of a hinge in accordance with the figures. The hinge 25 in the exemplifying embodiment is an integrated part of the connecting assembly. For example, the hinge 25 may consist of material of a part 26 of the second connecting assembly 20 which is thinner than the rest of the material. The thinner material forms one hinge with a function similar to the function of so-called "plastic hinges" or "flexure bearings". In alternative embodiments, the hinge may be of any known type of hinge or the like. The design also includes at least one locking device 27 with which a locking of the base supporting spacer block to the packaging

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may be accomplished. The locking device may be of a type shown in the figures, or may be of another suitable for the purpose locking device.

When using this variant of the base supporting spacer block, the second connecting assembly's 20 articulated part **29** which at its free end (or in the ends proximity) is comprised of at least one first locking member **28**, is inserted into the second opening (hole, slot) 24B, after which the first connecting assembly is inserted into the first opening (slot, holes) 24A. After the second connecting assembly's articulated part 29 has been inserted into opening 24A, the articulated part 29 is folded down against the topside of the material layer of the packaging 2. During this folding of the articulated part, a coupling of the first locking member **28** (included in the locking device 27) and the second locking member **30** (included in the locking device 27) occurs, which via the opening 24 (slot, holes) extends from surface contact part 11 completely or partially via the opening 24 through the material layer of the packaging 2. The material layer of the packaging 2 is essentially secured in the space formed between the interlocking first and second connecting assemblies 19, 20 and surface contact part 11. By way of this design the base supporting spacer block is connected to the packaging in a reliable manner. The locking of the base supporting spacer block 4 to the packaging may be temporary or permanent.

A specific feature of the locking device 27, according to the embodiment, is that the first locking member 28 is engaged (clamped) firmly between the second locking members 30A and 30B. The design has the technical effect of achieving an efficient connection (coupling) between locking members 28, 30A and 30B. The design also has the technical effect that the maximum compression of the articulated part toward the surface contact part 11 is restricted. Furthermore, the design has the technical effect that locking member 30B prevents locking member 28 from rotating out of its engagement (wrought out from its engagement) with locking member 30A during compression of the articulated part against surface contact part 11 with the intermediate packaging.

In the exemplifying embodiments, it is also unique that locking member 28 is relatively longer than locking member 30A, which means that the risk of the cardboard being pressed together (damaged) during connection of the connecting assemblies is essentially eliminated, or greatly reduced. This design allows the maximum compression of the first locking member and the second lock member to be limited, which in turn means that the risk of the cardboard being damaged for this reason is eliminated or essentially eliminated.

The design is further comprised of at least one recess **50** (shown in Figure 3D). In the exemplifying embodiment, the second connecting assembly's 20 articulated part 29 in the vicinity of locking members 27, 28 includes at least one first recess 50 and at least one second recess 50. The recess 50 or recesses 50, facilitates the disengagement of the locking members, of locking members 28 with locking members 30A and 30B. Disengagement of the locking members may for example be accomplished by an elongate prying device such as a screwdriver or the like being partially inserted into the recess 50 and then used to pry apart the locking members from one another.

Figures 3B to 3D show an alternative embodiment of the base supporting spacer block whose spacer part 8 is relatively narrower than in the previously shown embodiment. The spacer part 8 is further positioned at the edge, or in the edge's vicinity, of the base supporting spacer block 4. This design has the advantage that it may be placed under a pallet, which is narrower than a standard EUR pallet, which is intended to be used for transporting home appliances and the like. By way of this design, the pallet attached to the goods may be lifted with a forklift, unlike existing types of designs. The alternative embodiment also includes at least one reinforcement **51**, or the like, which is placed on the underside of the surface contact part 11. The reinforcement 51 extends, in the exemplifying embodiment, essentially perpendicular from the spacer part 8. However, in alternative embodiments the reinforcement 51 or reinforcements 51 may extend at a different angle than an essentially perpendicular angle in relation to the spacer part 8.

Figures 3E and 3F show a second embodiment of the base supporting spacer block. In this variation of the base supporting spacer block, at least one of the connecting assemblies is comprised of a hinge (joint, bearing) 25 or the like, which allows the connecting assembly to be folded down against the packaging and fixed to another part of the connecting assembly. The hinge may be of a previously known hinge (joint, bearing) suitable for the purpose or may be a hinge in accordance with the figures. The design according to Figures 6 and 7 includes at least one third connecting assembly 21 and at least one fourth connecting assembly 22.

Once again referring to Figure 4A and 4B is shown how the first connecting assembly 19 of the embodiment includes at least one first connector **31** and at least one second connector **32**. The second connecting assembly 20 is comprised, in the embodiment, of at least one first connector **33** and at least one second connector **34**. In the shown embodiment, the first

connecting assembly extends from the plane of surface contact part 11. The second connector 34 extends from at least one side of the first connector 33 (preferably at a distance from the end of the first surface contact part). The first connector 31 and the second connector 32 form, in the exemplifying embodiment, a cross-like shape. In the shown embodiment the second
5 connector 32 extends in an essentially perpendicular direction from surface contact part 11. In alternative embodiments, the second connector may extend out only on one side of the connecting assembly 20, preferably in toward the packaging. The function of the second connector is shown in Figures 8 and 9, where the second connecting assembly's 20 connector 34 on its one side is connected to the side of the packaging and the other side is connected to a
10 part of the packaging which constitutes a lid (cover or other sealing part) for the packaging 2 that is folded down and locked firmly against the second connector 34 with its second side.

Figure 5A shows an exemplifying embodiment of the packaging 2 spread-out. The exemplifying embodiment is not limiting for the present invention. The packaging 2 is comprised of at least one material layer 35 or several material layers. The packaging 2
15 includes a set of holes (openings) for the connection of the base supporting spacer blocks. With reference to Figure 5B, an alternative embodiment for the placement of holes (openings) in the packaging is shown.

The base supporting spacer blocks 4 preferably include at least one protective groove 36 for one or more straps 37. The protective groove 36 is intended to protect straps and the like in
20 conjunction with the handling of goods with a forklift or similar. The figures show embodiments where the base supporting spacer blocks 4 include at least one first protective groove 36 and embodiments where the base supporting spacer blocks 4 include at least one first protective groove 36 and at least one second protective groove 36. The protective grooves 36 are located on the opposite side (bottom side) of the surface contact part 11. In
25 alternative embodiments, it is conceivable that the base supporting spacer blocks 4 include more protective grooves than two, three, four, etc. The design of the protective grooves 36 may vary within the scope of the present patent application. In the shown embodiment, however, the protective groove consists of a space that is bounded on three directions and is open in the fourth direction. The protective groove's one side may consist of the bottom of
30 surface contact part 11, the second and the third side may consist of protruding segments from surface contact part 11 which at its free end may be comprised of transverse segments whereby the protruding segments may be T-shaped. In alternative embodiments, the base supporting spacer block may lack protective grooves 36 for straps 37.

When connecting the base supporting spacer blocks as shown in Figures 3D and 3E, the first connecting assembly's 19 first connector 31 is initially inserted into at least one first opening 24 hole or slot in the packaging 2. Upon insertion of the first connecting assembly's 19 first connector 31 in the opening 24 (slot, holes), the surface of the base supporting spacer block's
5 surface contact part 11 is preferably angled in relation to the packaging's plane (horizontal plane). After the connecting assembly's first connector 31 is inserted into the opening 24 (slot, hole), a wriggling of the base supporting spacer block 4 in towards the packaging 2 occurs. At the same time the base supporting spacer block 4 is inserted in towards the packaging 2, a simultaneous insertion of the second connecting assembly's 20 articulated part
10 29, the third connecting assembly 21 and the fourth connecting assembly 22 occurs into openings in the packing 2. After the connecting assemblies of the base supporting spacer block 4 have been inserted into the openings (slots, holes) in the packaging, the base supporting spacer block is then connected (attached) to the packaging. After the first base supporting spacer block has been connected to the packaging, the other base supporting
15 spacer blocks are connected to the packaging. The number of base supporting spacer blocks connected to the packaging may vary within the scope of the present patent application. The placement of the openings (holes, slots) in the packaging may vary greatly within the scope of the present invention. The packaging may consist of plastic materials.

In alternative embodiments, it is conceivable that the packaging 2 consists of another for the
20 purpose suitable packaging 2, packages, freight carriers and the like. The packaging may further be comprised of at least one other suitable for the purpose material layer.

With reference to Figures 8A and 8B, an alternative embodiment for packaging material which may be folded together is shown. The packaging may in this embodiment, for example, consist of some variant of cardboard box or the like. In the embodiment, the packaging's
25 (cardboard box's), side panels and any lid parts may be folded together toward the bottom layer of the box and thereby form a plane (a platform from the folded box). It is conceivable that at least one additional layer of material is added to the folded box (platform). The additional material layer may be a layer of cardboard or the like. It is further conceivable that the additional material layer (or layers of material) consists of a metal layer such as at least
30 one sheet of steel, aluminum or another for the purpose suitable metal or alloy of metals. It is further conceivable that the additional material layer is a variant of a lid (package, cover) or the like which is brought down over all or part of the plane (platform) consisting of the folded cardboard box (packaging). In the embodiment, the system functions as (is) a pallet without a

collar when the side panels are folded. With the side panels folded up, the system functions as a pallet with a collar.

With reference to Figure 2A, an alternative embodiment is shown where the system includes a cover (lid) **38** or the like. The cover 38 preferably includes at least one positioning device **39**
5 for the base supporting blocks (included in a second pallet (pallet system) placed on top of the cover 38 (included in the first pallet (pallet system))). The positioning device 39 may consist of a cavity, a frame or the like in which the base supporting spacer block 9 (on a second loading system) that is placed on top of the first pallet system, is connected to or placed.

With reference to Figures 9A to 9E, an alternative embodiment of the present pallet system is
10 shown. In the embodiment, the base supporting spacer block 4 is intended to be connected to a loading plane (cargo plane, platform) **40** of wood or similar. The loading plane is included as a part of the pallet system (in alternative embodiments, the loading plane 40 may be a separate unit). The loading plane may for example be designed and constructed just as the cargo plane on EUR pallets (without a base). The pallet in accordance with previously known
15 pallets is comprised of at least several elongated segments **41** which extend in one of the pallet's directions (in the embodiment shown in Figure 9A to 9C, the elongated segments extend in the pallet's longitudinal direction) and at least a number of second parts **42** which extend transversely to the first segments. In the exemplifying embodiment, the second parts are placed under the first elongated segments, in the elongated parts transverse direction.

At least several base supporting spacer blocks 4 are intended to be connected temporarily or
20 permanently to the loading plane 40. The number of base supporting spacer blocks 4 may vary within the scope of protection of the present patent application. However, in the exemplifying embodiment, the number of base supporting spacer blocks is six. The number of base supporting spacer blocks, in alternate embodiments, may be more or less. The number
25 may be varied according to the needs that exist.

A unique feature of the embodiment is that the second part 42 is comprised of at least one recess (notch) **43** which, when the first segment 41 and the second part 42 are connected to each other, form a channel **44** in which all or part of the connection assembly may be inserted and connected to at least one connecting part **45** formed by the recess. The channel 44 and the
30 connecting part 45 are formed in the lower area of the loading plane 40, the cargo plane during normal use.

The connecting part 45 has a shape whose size and form essentially correspond to, or is slightly smaller than the space between the connecting assembly 20 and surface contact part 11. The channel is bounded in the upward direction by the first elongated segment.

5 The channel 44 has a first opening 46 in the downward direction and in the horizontal direction relative to the second part and the loading plane. The channel 44 also has a second opening 47 which extends in an essentially vertical direction in relation to the pallet's topside. The channel 44 extends between the first opening 46 to the second opening 47 in the pallet's essentially horizontal direction.

10 During connection of the base supporting spacer block, the base supporting spacer block's articulated part is inserted into the channel's (notch's), first opening 46 and then conveyed along the channel's 44 (notch's) length to at least one angled surface 48, or arched (curved) surface, or a combination thereof, which affects the articulated part, with associated locking member, to move in the downward direction toward the second opening and the second locking member. The angled or curved surface 48 transitions into a shelf 49, support or the like, against which the front part of the articulated part rests against when the locking members are pressed together (connected) with each other.

When the first locking member and the second locking member are moved to a position where they come in contact with each other, they are then pressed together after which a locking between the first locking member and the second locking member occurs. During this compression the shelf 49 acts as a stop (rest) which enables the locking members in assemblies 19, 20 to be pressed together with one another. In an alternative embodiment of the present design, a signal such as preferably a clicking sound or the like occurs when the locking members are interlocked with each other. After locking, the connecting part 45 of the loading plane 40 is essentially secured in the space formed between the interlocking first and second connecting assemblies 19, 20 and the surface contact part 11.

In alternative embodiments, it is conceivable that the recess 43, notch, has a different form than that of the exemplifying embodiment found in the figures. The connection of the base supporting spacer blocks 4 may be temporary or permanent.

30 In the preferred embodiment, the edge may include a second recess (not shown in the figures) in the elongated segment's longitudinal direction. A strip or the like which extends for all or part of the pallet's edge is placed in the recess. The strip has a shape which can not easily be machined in place on the pallet.

With reference to Figure 10 is shown how several loading planes are stacked on each other in the transportation of pallets without goods (cargo). The pallets are transported to the site of use stacked without base supporting spacer blocks.

5 In an alternative embodiment of the present system, it is conceivable that at least one first base supporting spacer block 4 and at least one second base supporting spacer block 4 are connected together with each other. This interconnection may be achieved with a connector which is connected between at least one bracket, connection device or the like (not shown in the figures) in the first base supporting spacer block and at least one bracket, connection device or the like in at least one second base supporting spacer block. It is further conceivable
10 that a connector and at least one of the base supporting spacer blocks are manufactured in one piece.

In the detailed description of the present invention, design details may have been omitted which are obvious to persons skilled in the field relating to the method and device. Such obvious design features are included to the extent necessary for a proper function to be
15 obtained for the present pallet system.

Even if certain preferred embodiments have been shown in more detail, variations and modifications of the method and device may be apparent to those skilled in the field of the invention. All such modifications and variations are considered to fall within the scope of the following claims. For example, it is conceivable that one or some of the holes or slots are
20 omitted. It is also conceivable that tape, glue or another adhesive or adhesives are used to permanently or temporarily fix the base supporting spacer block to the packaging. It is further conceivable that the packaging 2 is comprised of at least one or more reinforcements, reinforcing material layers or the like. The reinforcements may for example be located adjacent to the base supporting spacer block's connection points to the packaging 2.

25

Advantages of the Invention

- With the present invention, a number of advantages are achieved. The most obvious is that a cost-effective pallet system, where the pallet is directly integrated with the packaging, is obtained. Another advantage of the present invention is that the base supporting spacer blocks
- 5 may be connected to packaging without tape or the like being used. A further advantage of the present design is that its size may be varied in a number of dimensions, where the actual size of the goods determines the size of the pallet. The design also results in significant savings in weight compared to existing varieties of reusable pallets and the like. The design also results in a reduced risk of the spread of pests when compared to reusable wooden pallets.
- 10 With the present alternative embodiment, the benefits of wood pallets are achieved while pallet weight is decreased. A further advantage of the present invention is that the base supporting spacer blocks are of a material that does not absorb moisture, or essentially does not absorb moisture.

Claims

1. Pallet system (1) intended for the movement and storage of goods including at least one type of packaging (2) and at least one first base supporting spacer block (4) and preferably several base supporting spacer blocks which are intended to be connected to packaging (2), said packaging (2) comprised of at least one material layer, said base supporting spacer block (4) comprised of at least one first surface contact part (9) which is intended to rest against the underlying surface (10) and at least one second surface contact part (11) intended to rest against the packaging (2) and at least one, between the first surface contact part (9) and the second surface contact part (11), intermediate spacer part (8), said surface contact part (11) against the packaging (2) comprised of at least one first connecting assembly (19) and at least one second connecting assembly (20) which are intended to be connected to the packaging (2) by at least one first opening (24), hole, slot, or the like, and connect to the packaging (2) by at least one second opening (24), hole, slot or similar **characterized by** that at least one of the base supporting spacer block's (4) connecting assemblies includes at least one hinge (25) or similar, and at least one locking device (27) with which the base supporting spacer block (4) may be locked to the packaging (2) and that said base supporting spacer blocks include at least one protective groove (36) for straps or similar.
2. Pallet system (1) according to claim 1 **characterized by** that locking device (27) consists of at least one first locking member (28) and at least one second locking member (30) which when locked together form a space between the interlocking first and second connecting assemblies (19, 20) and surface contact part (11), said second locking member (30) including second locking members (30A) and (30B) which when locked together with the first locking member (28) restricts the maximum compression of the articulated part (29) toward the surface contact part (11) which essentially hinders the intermediate packaging (2) from being compressed and thereby damaged.
3. Pallet system (1) according to claims 1 or 2 **characterized by** that the base supporting spacer block (4) is comprised of at least one third connecting assembly (21) and at least one fourth connecting assembly (22) with which the base supporting spacer block via at least one third opening (24) and one fourth opening (24) is connected to the packaging (2).

4. Pallet system (1) according to at least one of the previous claims **characterized by** that the packaging (2) consists of, or includes, at least one cardboard box (3) or similar.
5. Pallet system (1) according to claim 2 **characterized by** that the packaging (2) consists of, or includes, at least one loading plane (40).
6. Pallet system (1) according to claim 5 **characterized by** that the loading plane (40) is comprised of at least several elongated segments (41) which extend in one of the pallet's directions preferably in the pallet's longitudinal direction and at least a number of second parts (42) which extend transversely in relation to the elongated segments (41), said second part (42) being comprised of at least one recess (43) which, when the segment (41) and the second part (42) are connected to each other, form a channel (44) in which all or part of the connection assembly may be inserted and connected to at least one connecting part (45) formed by the recess, said channel (44) and the connecting part (45) being formed in the lower area of the loading plane (40) during normal use.
7. Pallet system (1) according to at least one of the previous claims **characterized by** that the channel (44) includes an angled, arched or curved surface (48) that transitions into a shelf (49), support or the like, against which the front part of the articulated part (29) rests against when the locking members of connecting assemblies (19, 20) are pressed together with each other.
8. Pallet system (1) according to at least one of the previous claims **characterized by** that the pallet system includes at least one lid (38) with at least one positioning device (39), on which a second pallet system may be placed and positioned.
9. Method for use of the pallet system according to at least one of the claims 1 to 8 **characterized by** that at least one and preferably several of the base supporting spacer blocks (4) is connected to the packaging.
10. Method according to claim 9 **characterized by** that at least one of the base supporting spacer blocks (4) is locked to the packaging with at least one locking device.

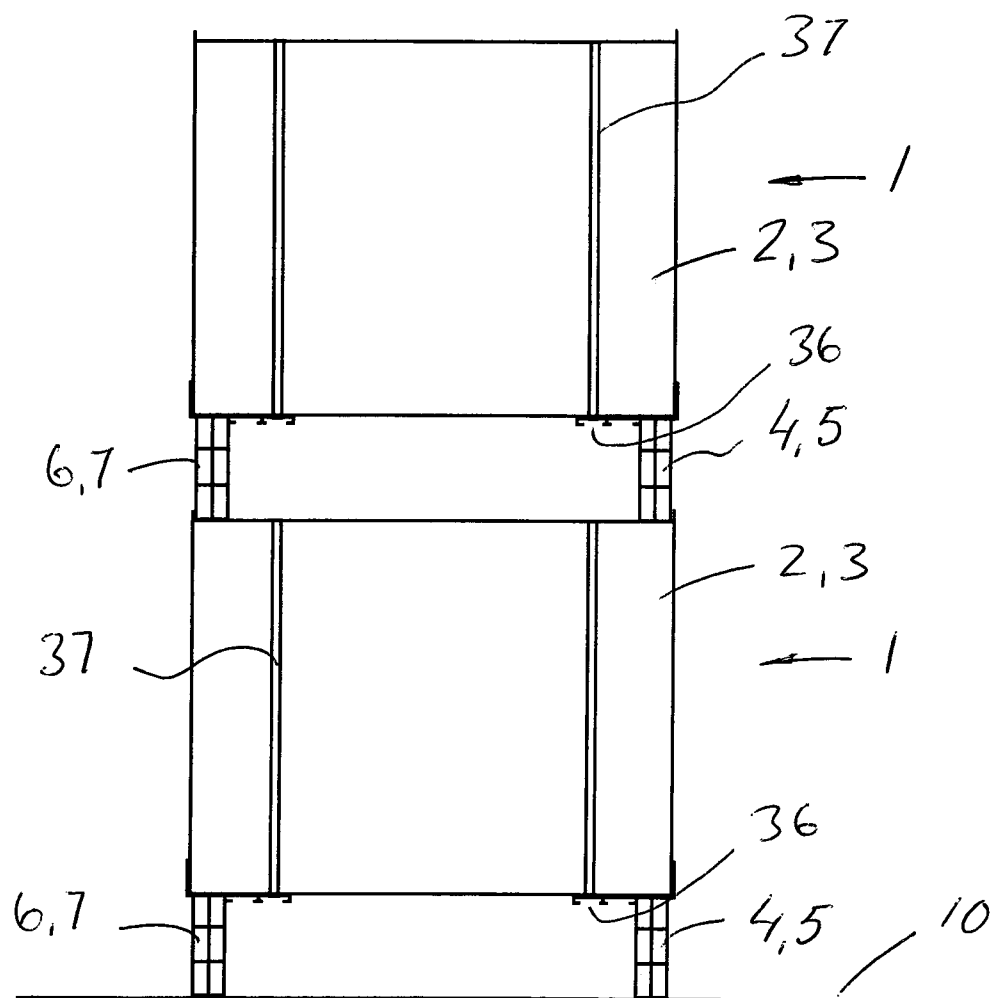


FIG 1

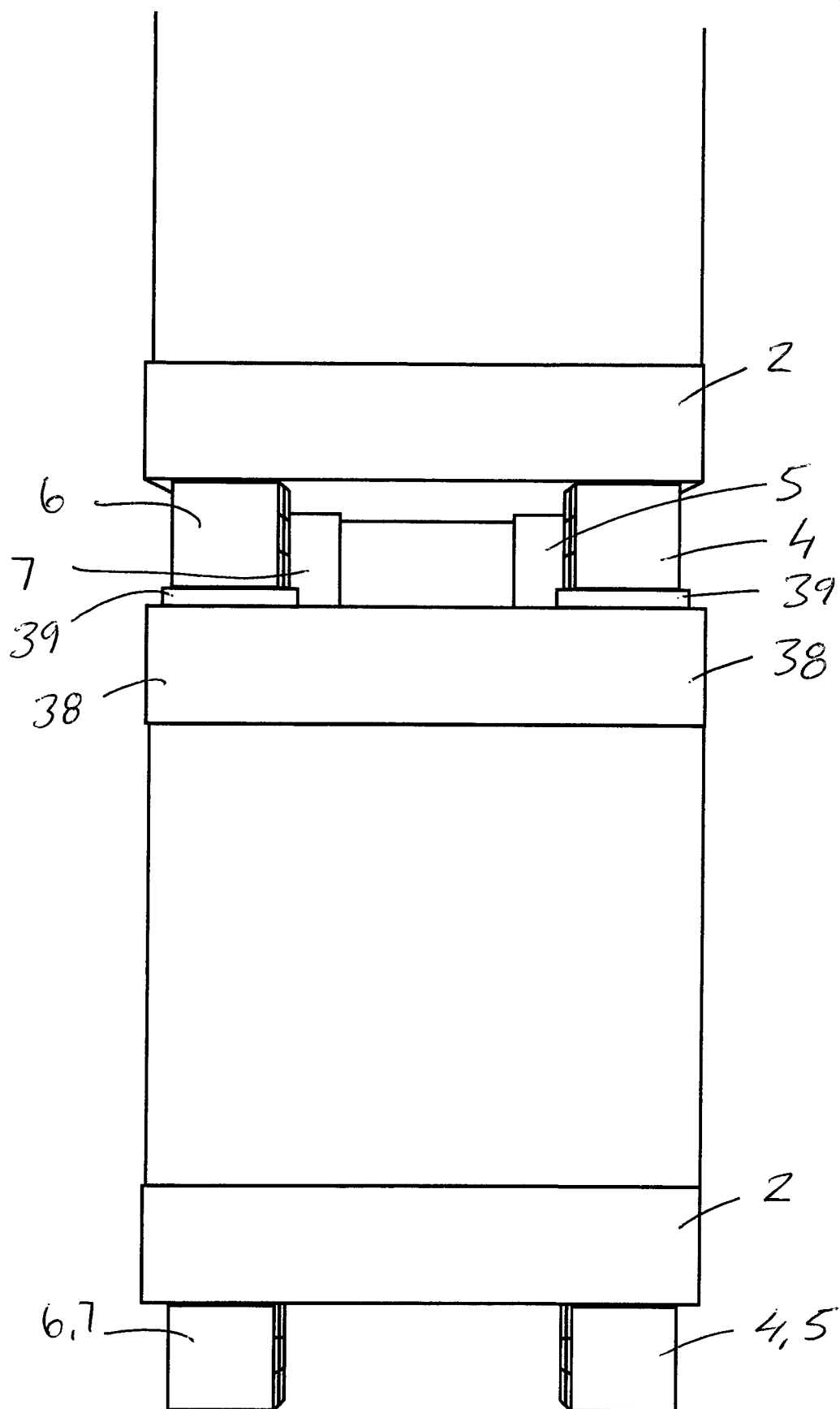


FIG 2A

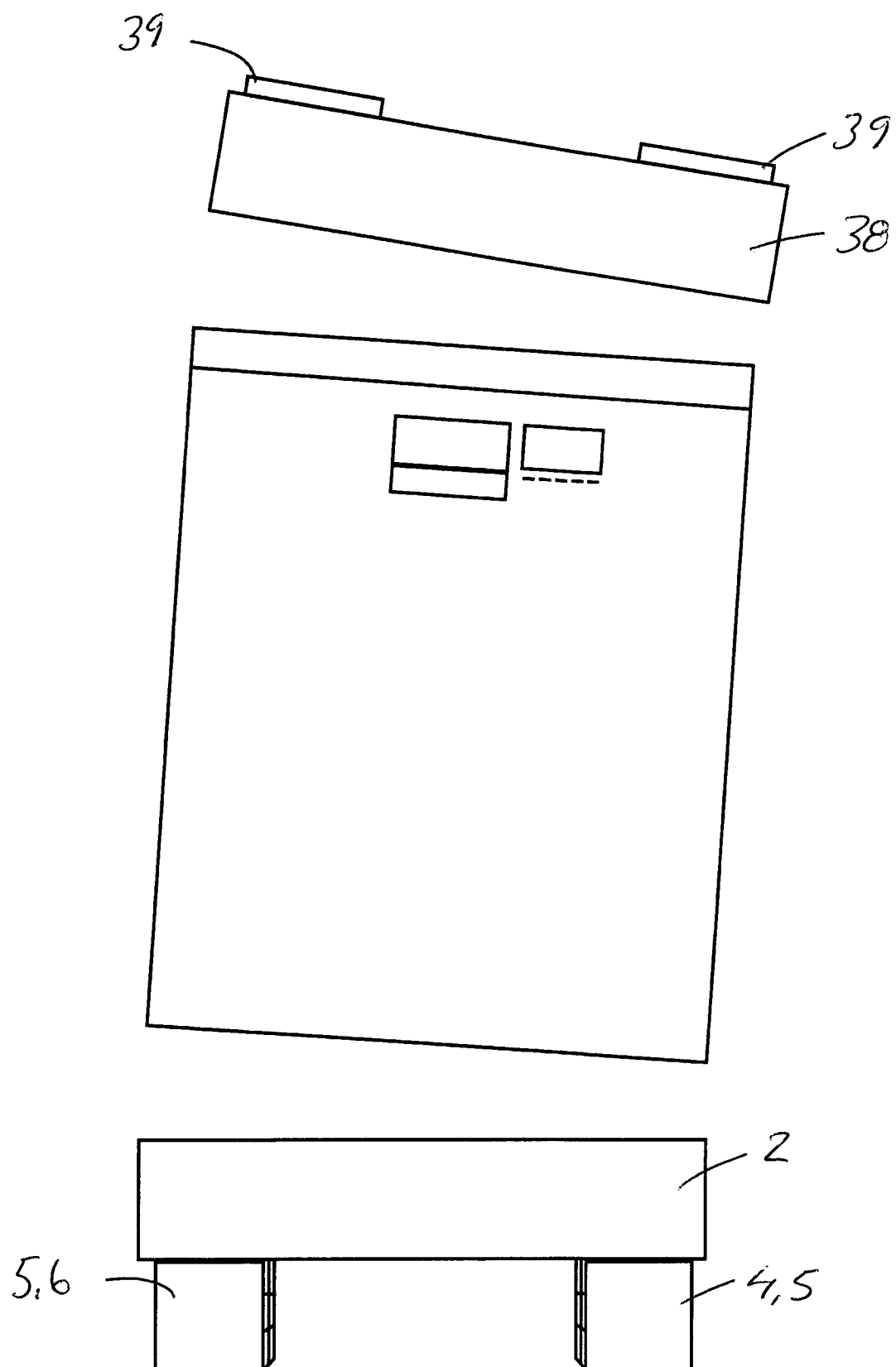


FIG 2B

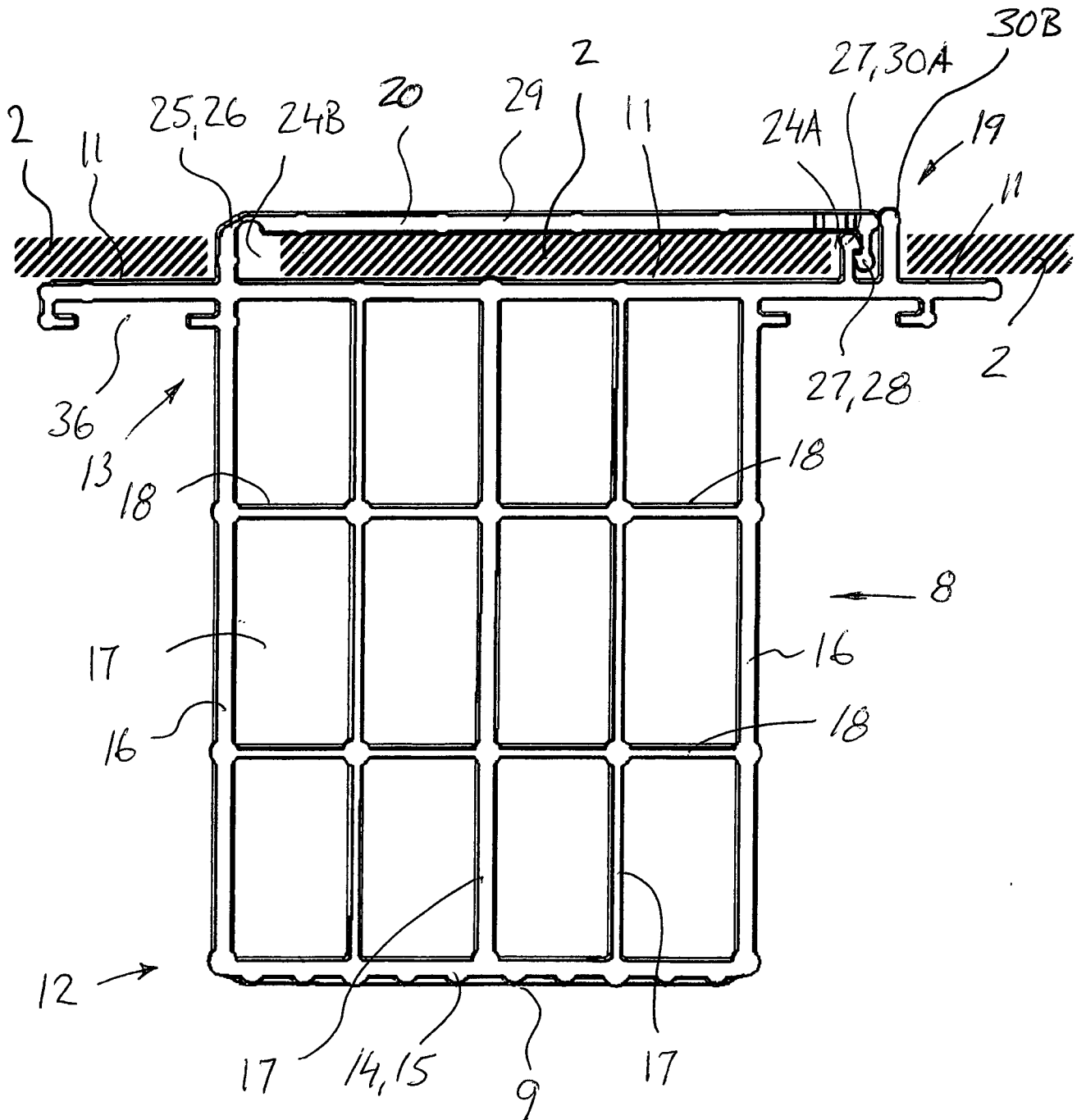


FIG. 3A

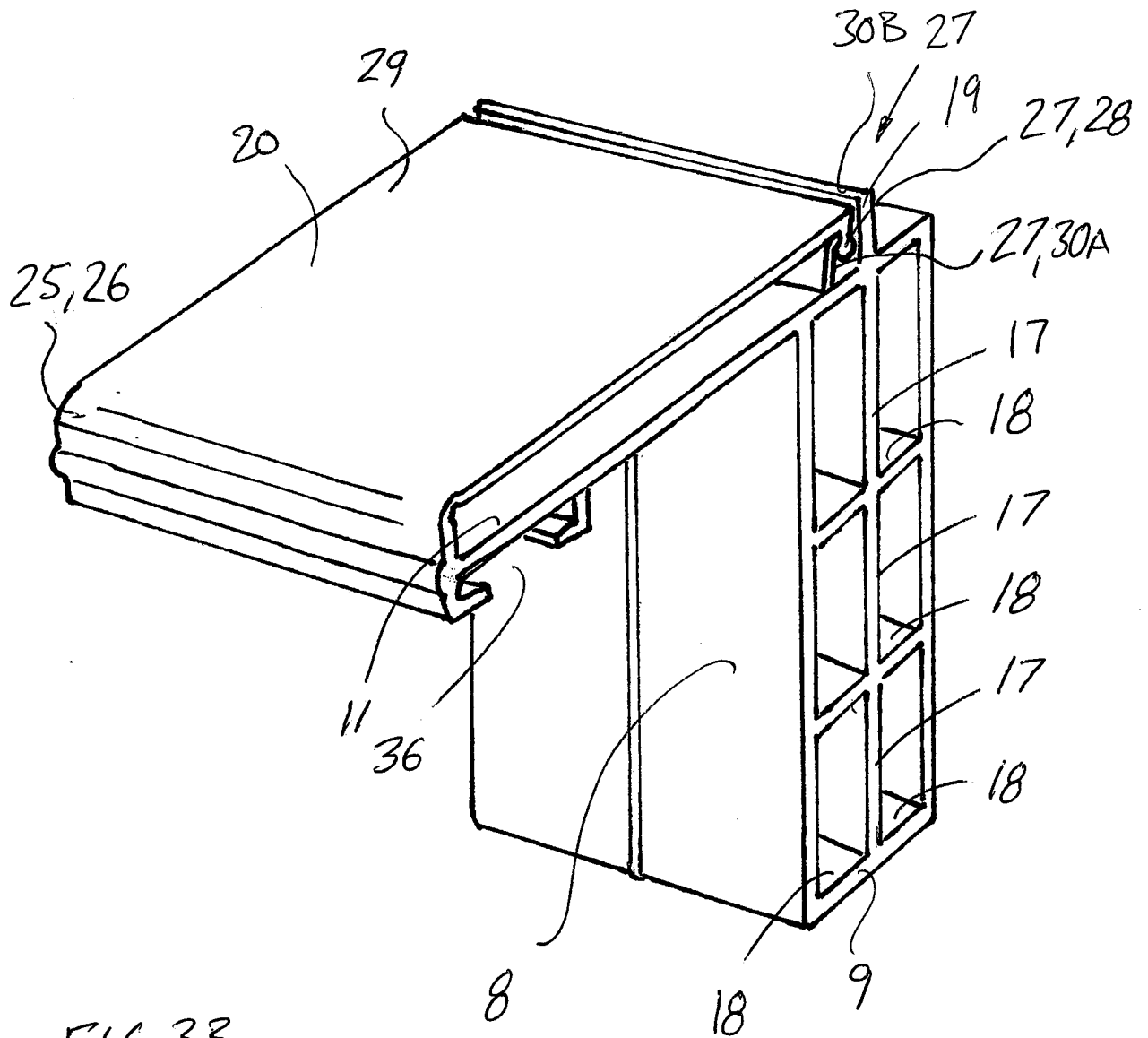
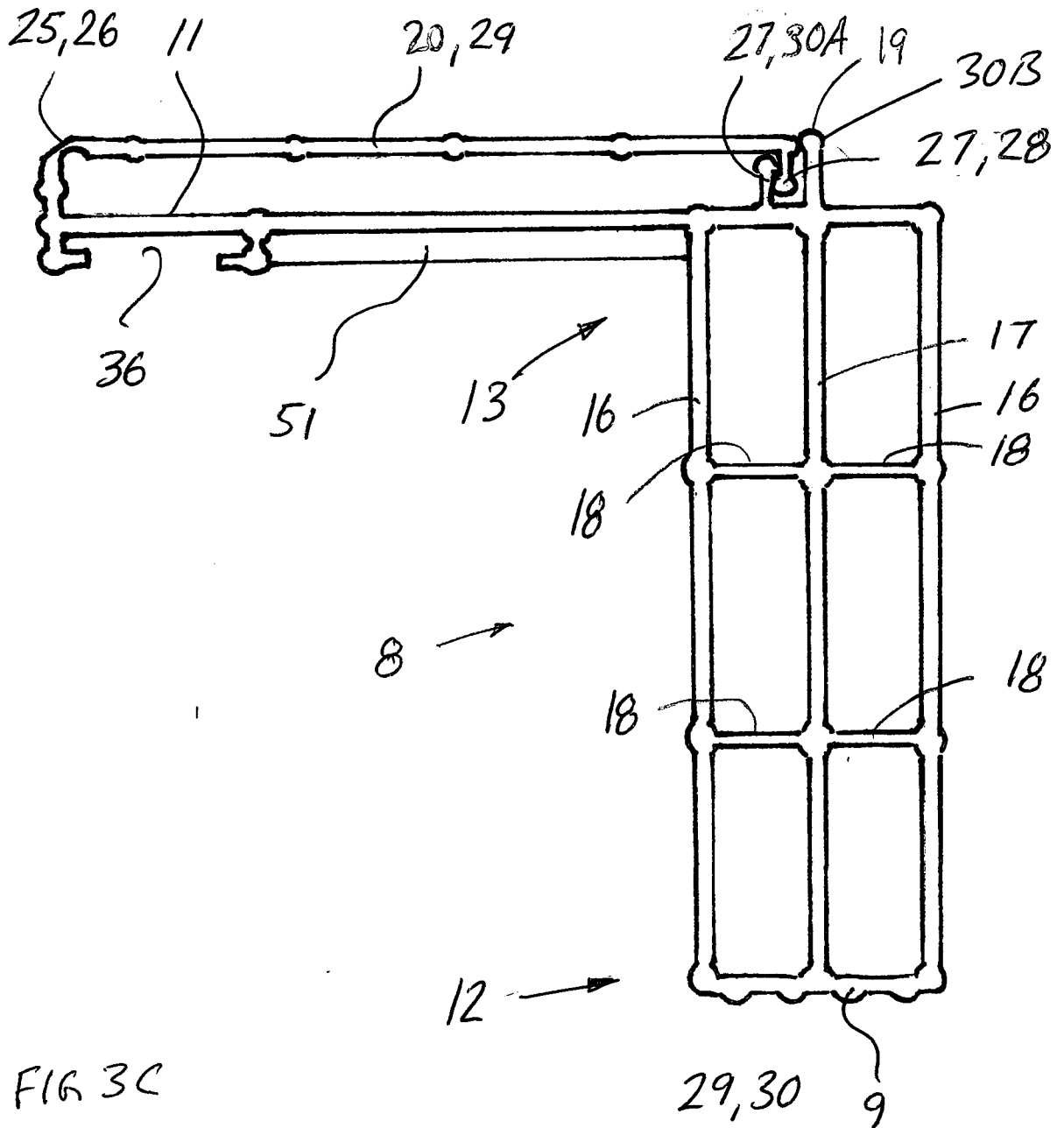
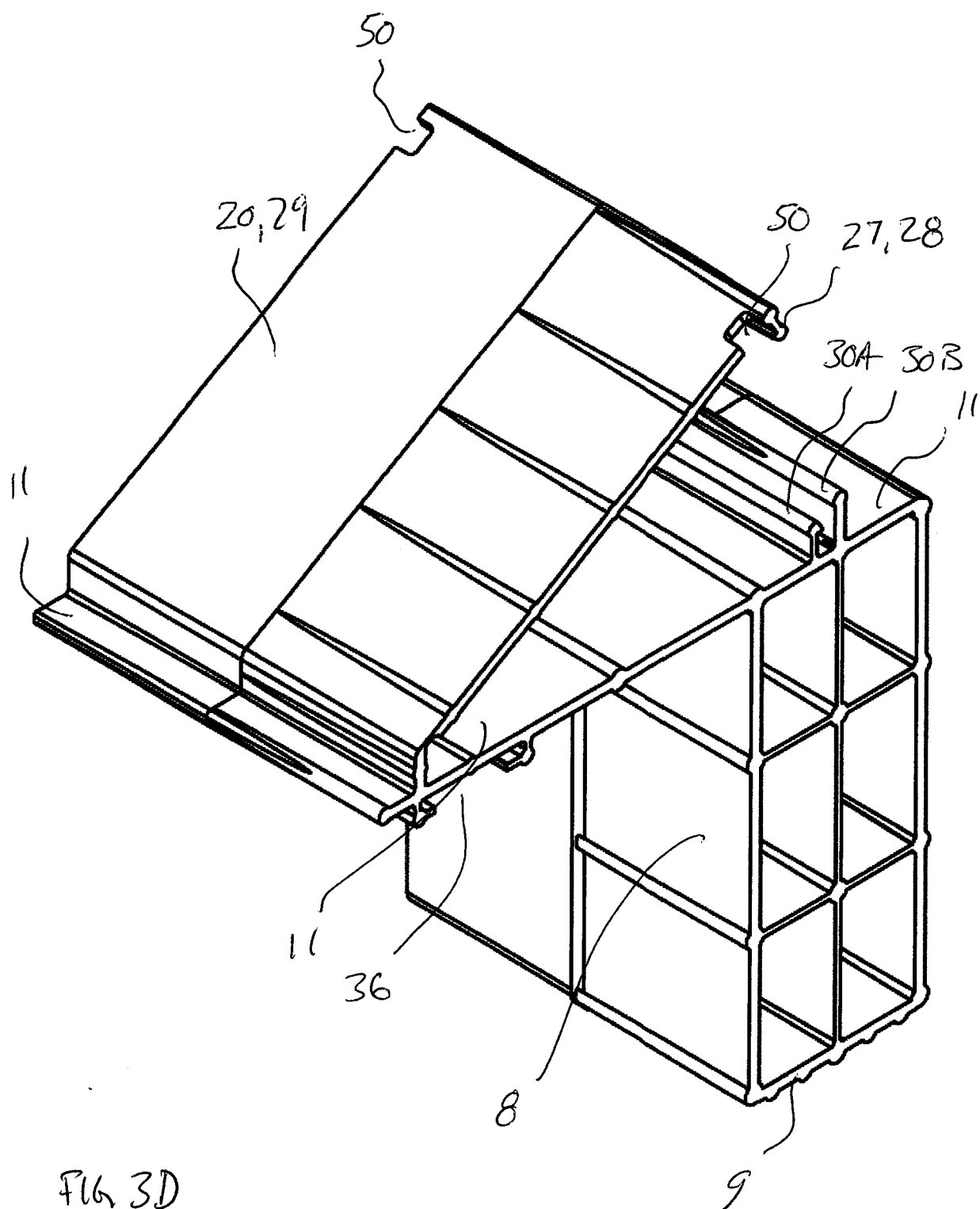


FIG 3B





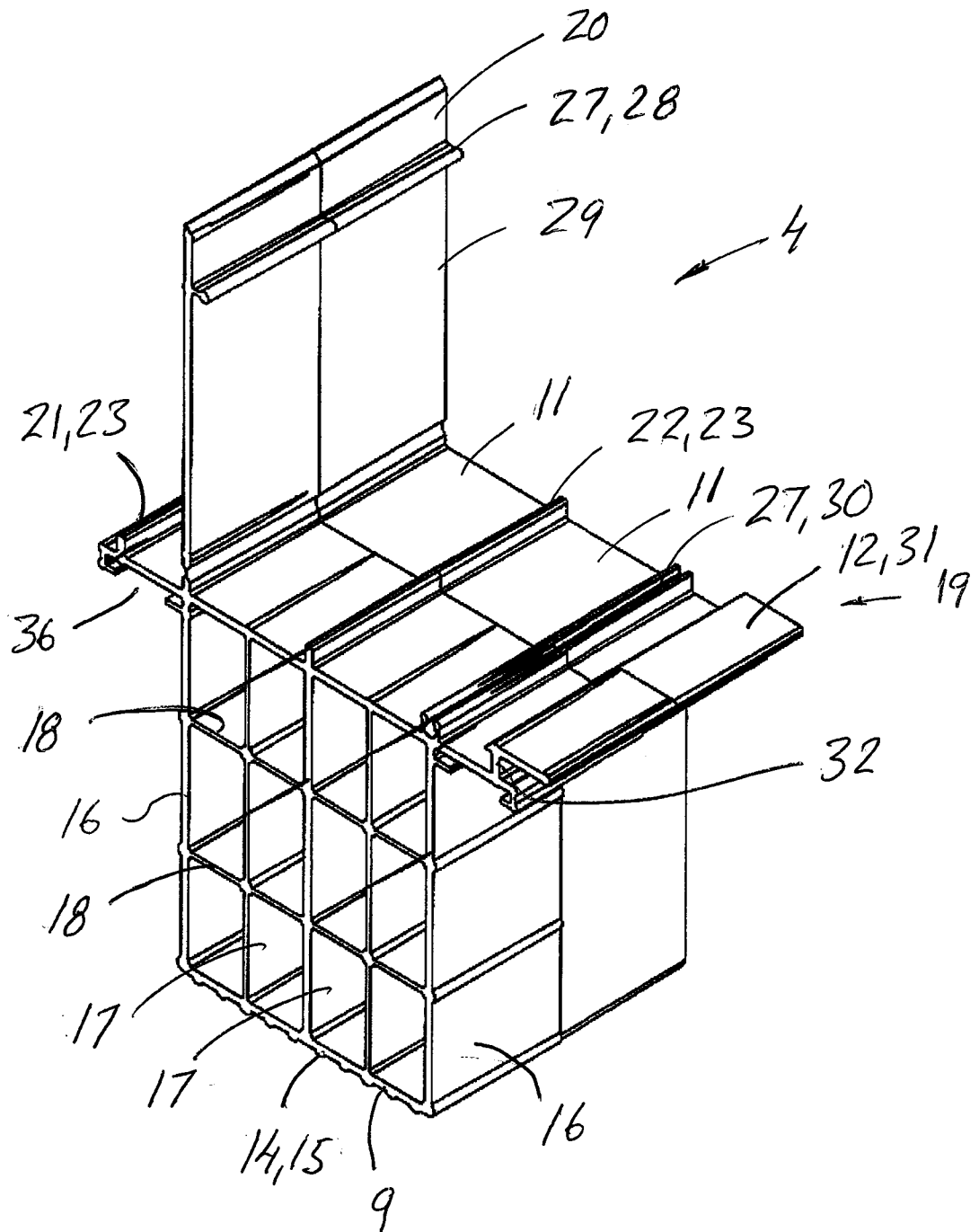


FIG 3E

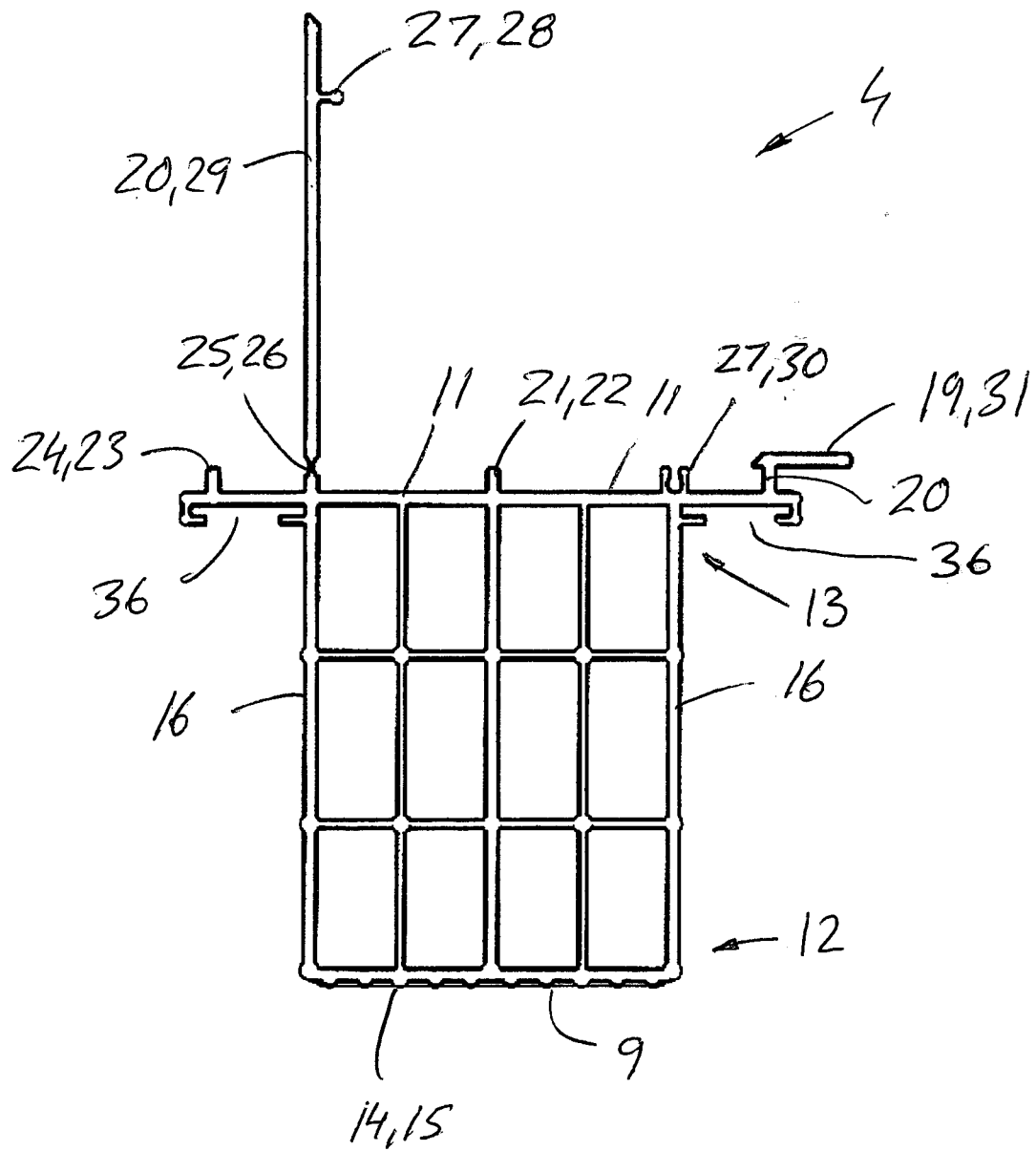
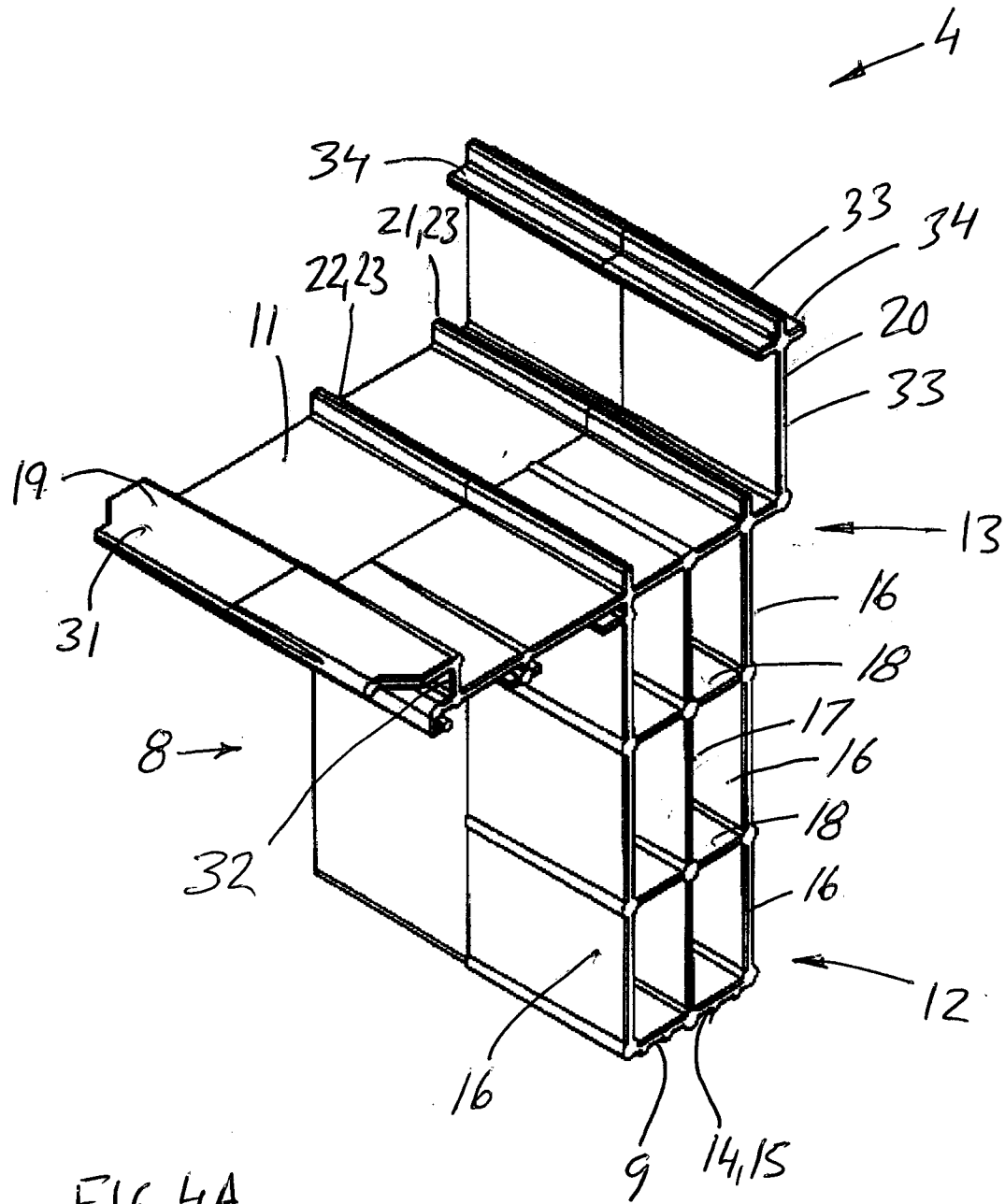
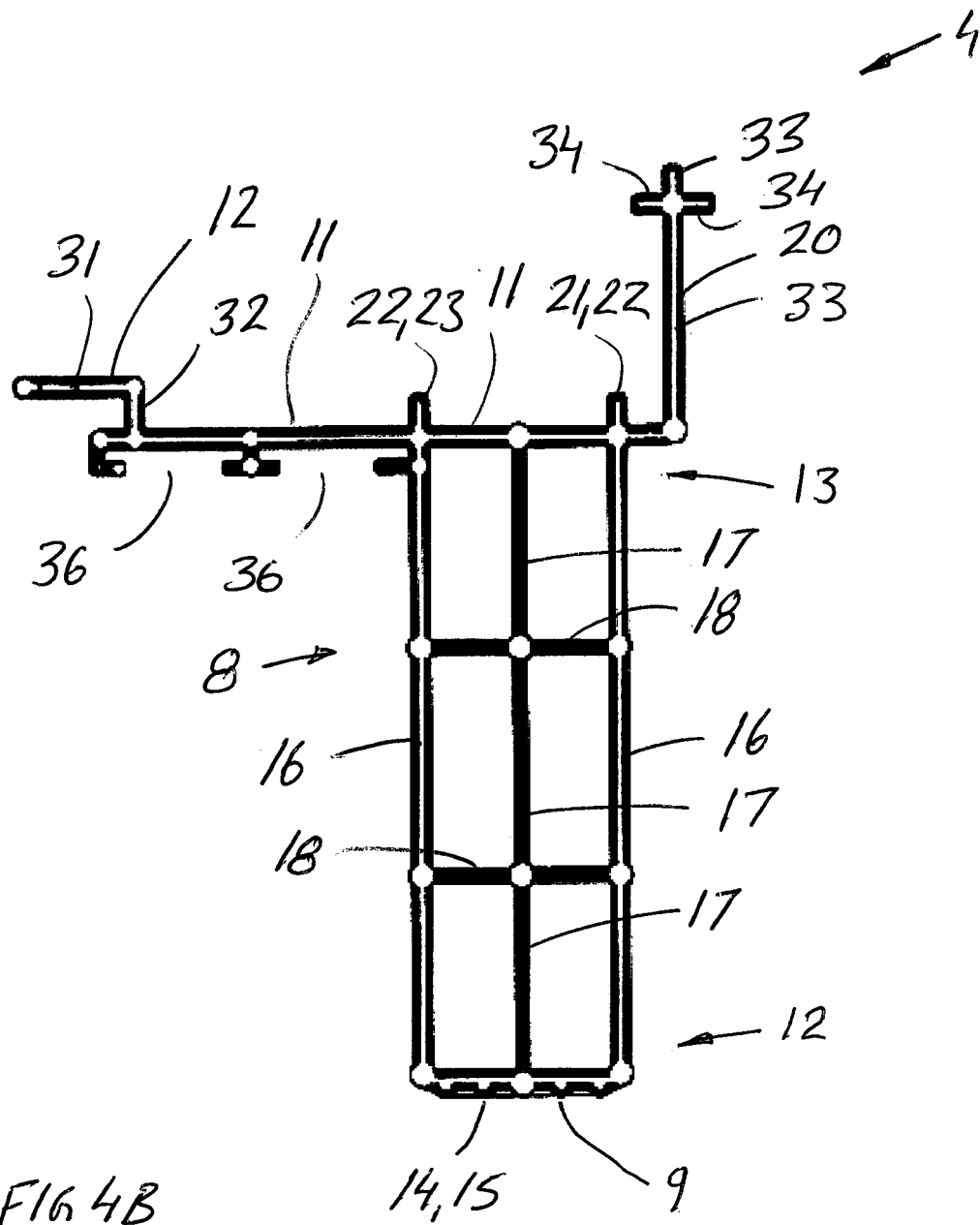


FIG 3F





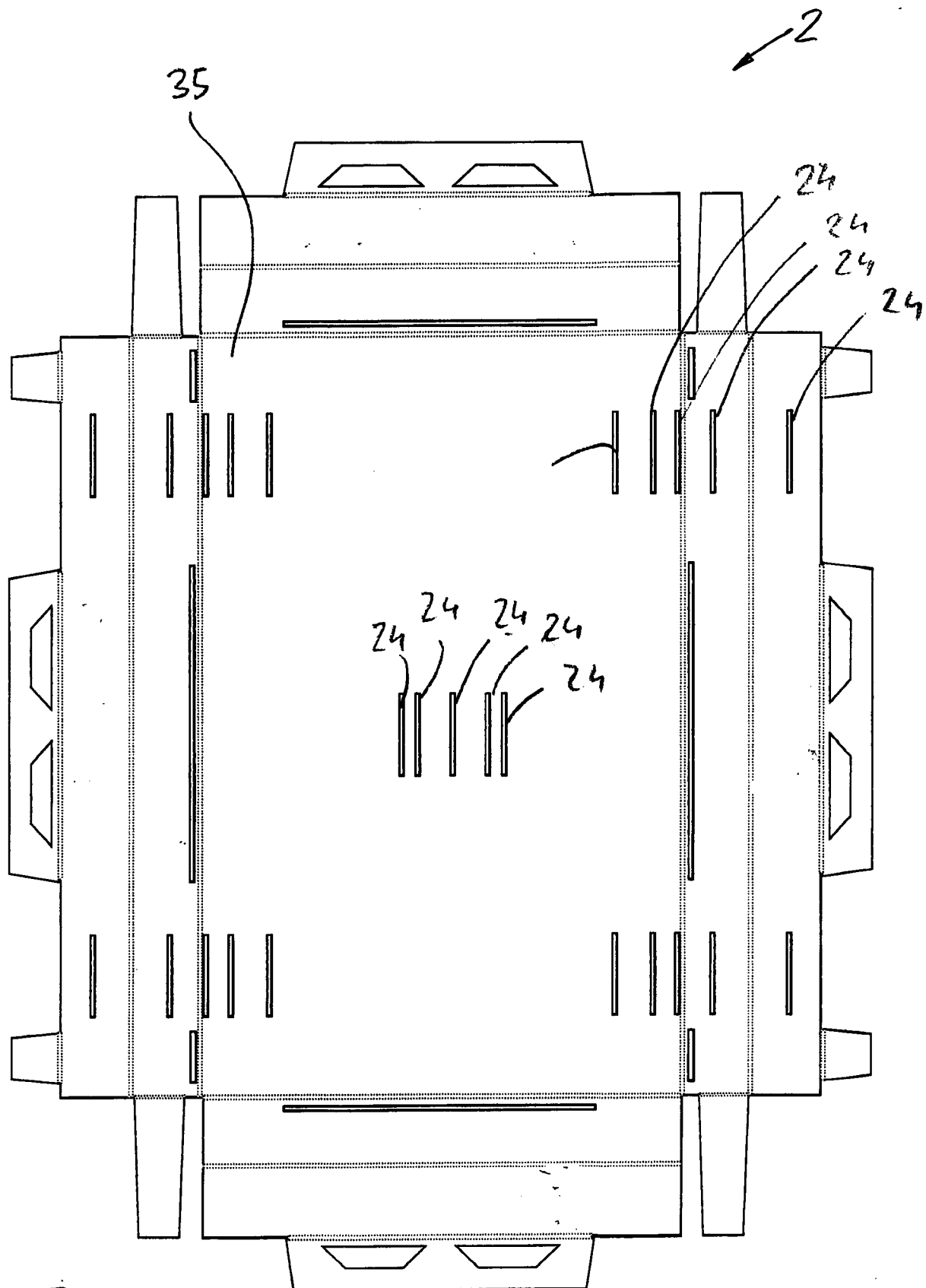


FIG. 5A

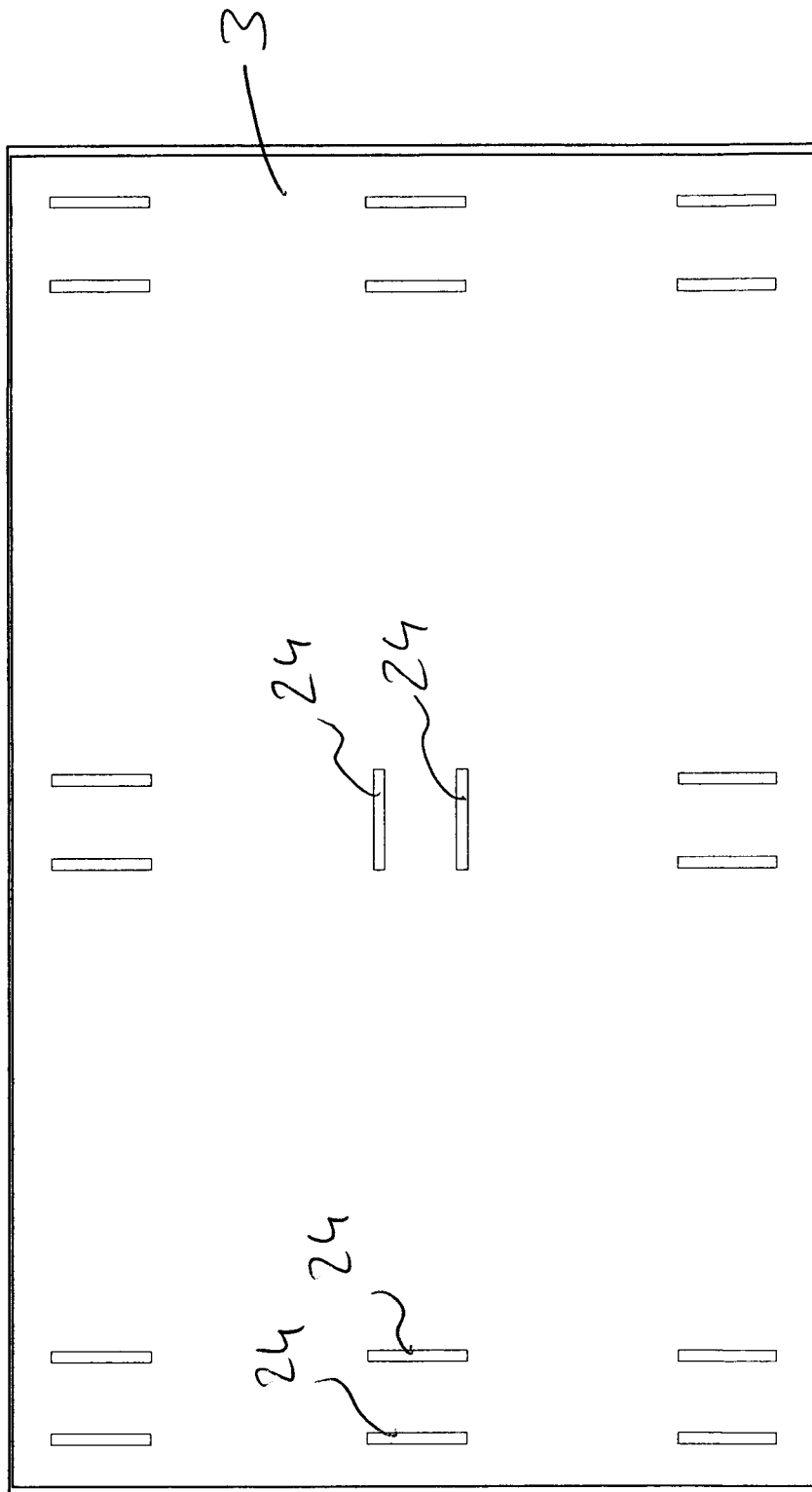


FIG. 5B

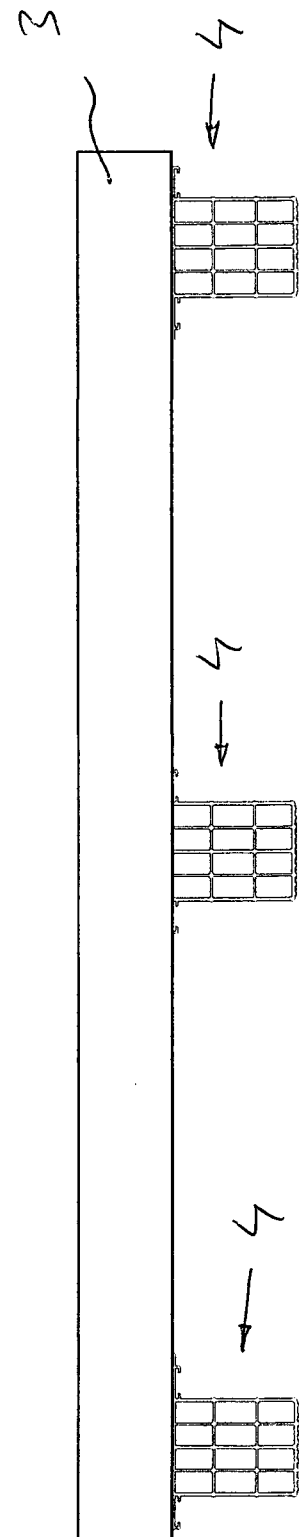
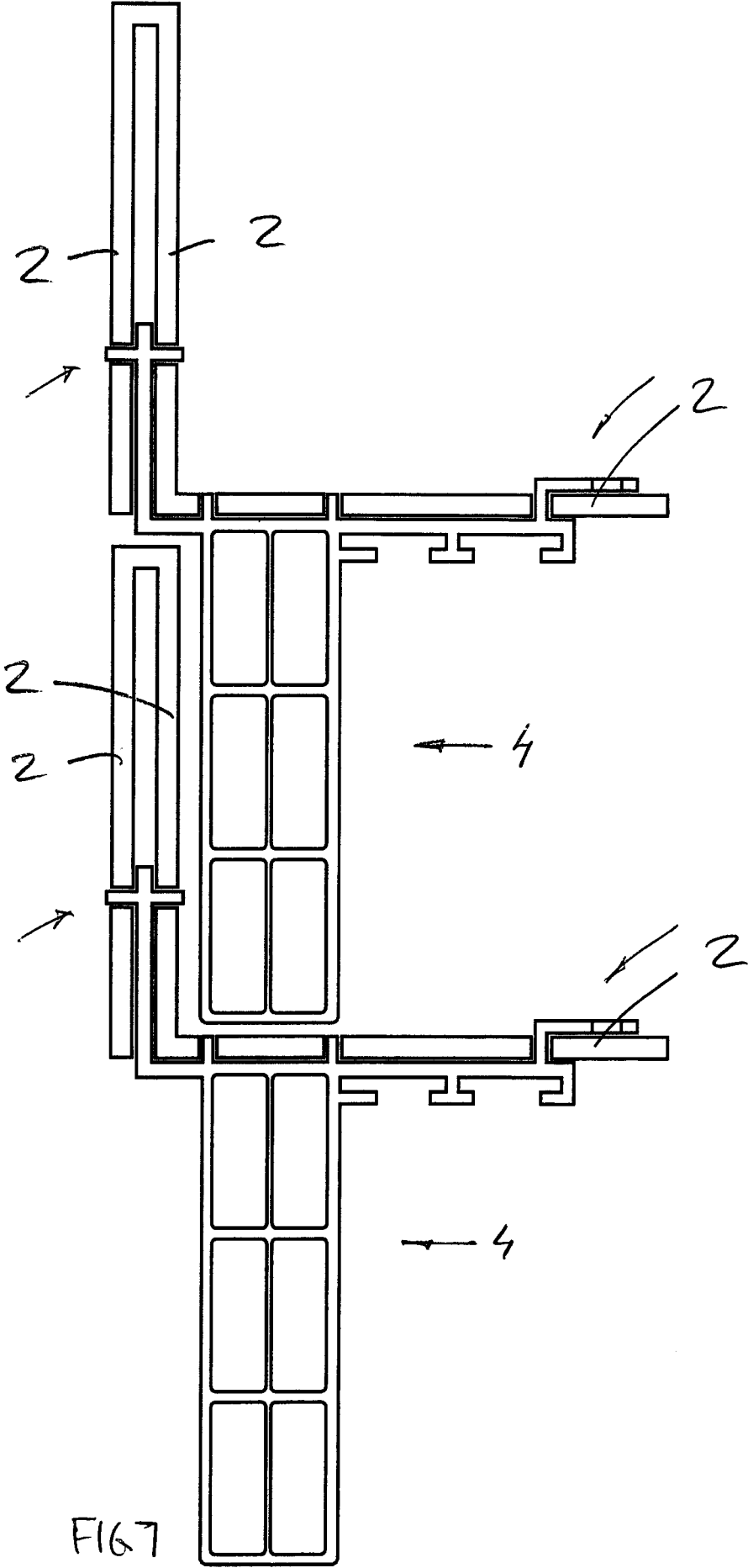


FIG. 6



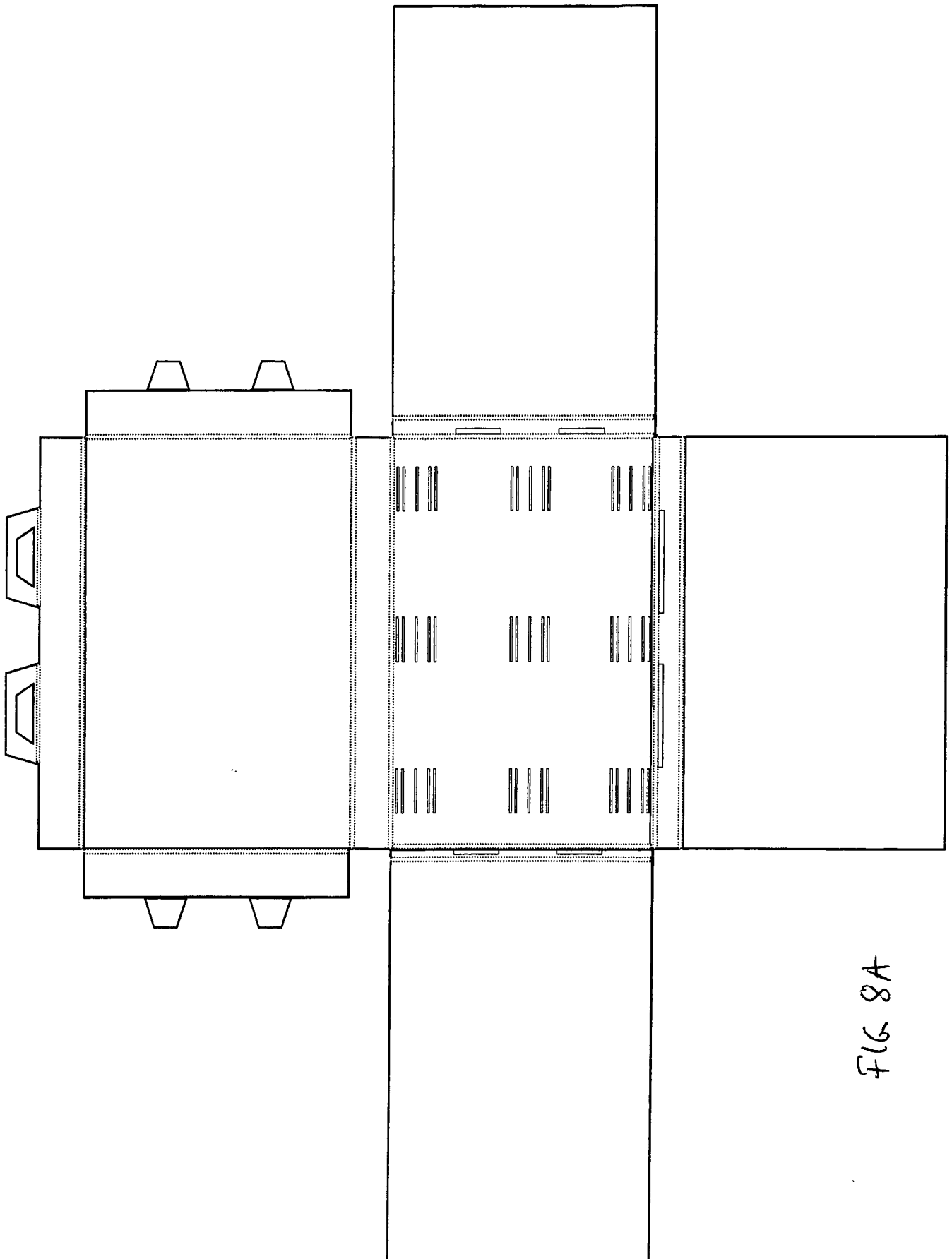


FIG 8A

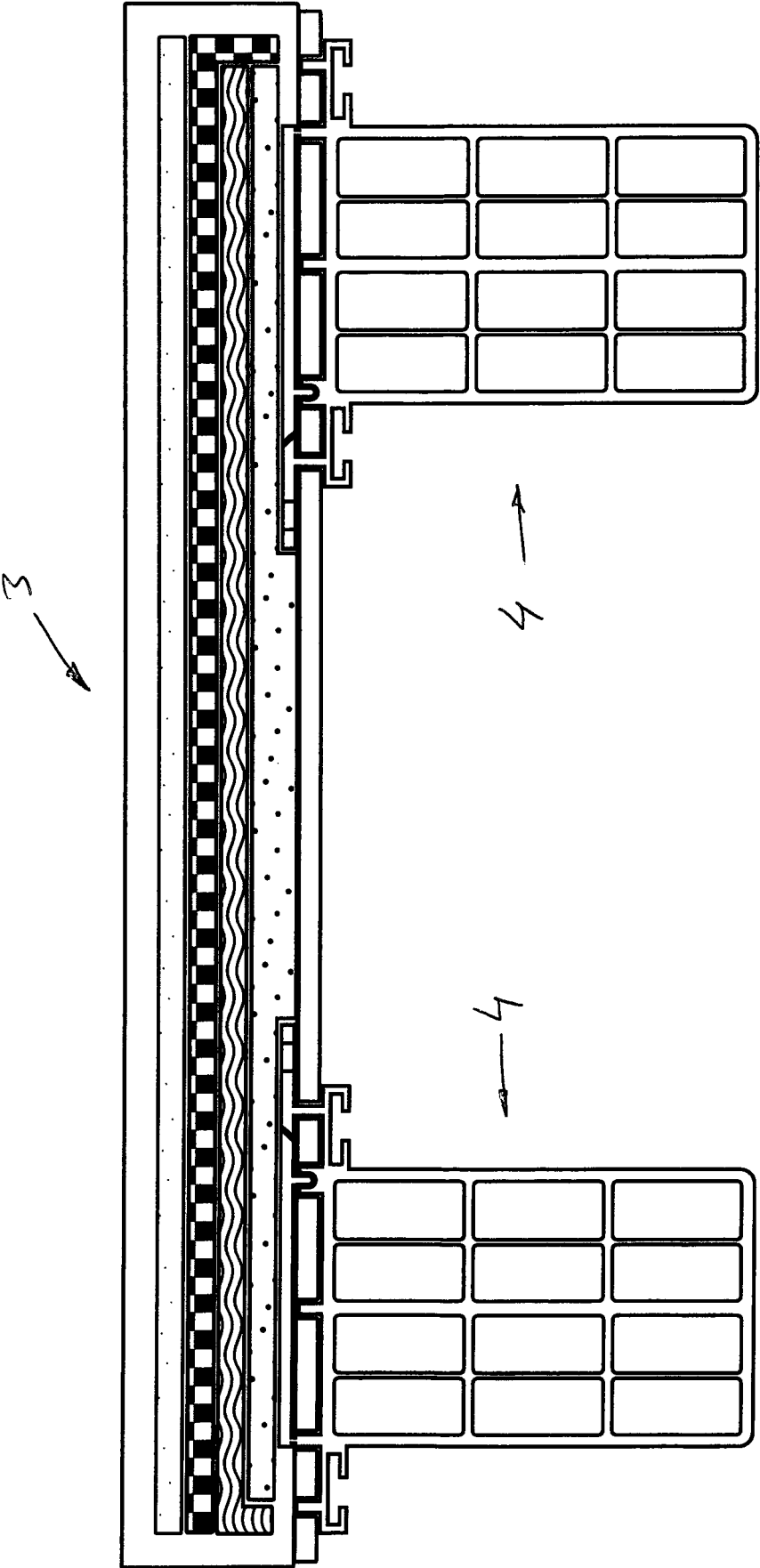


FIG 8B

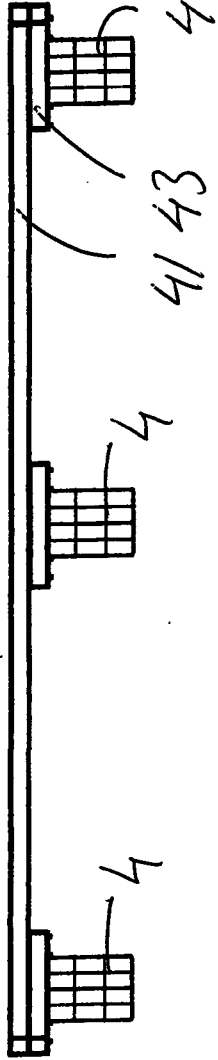


FIG 9B

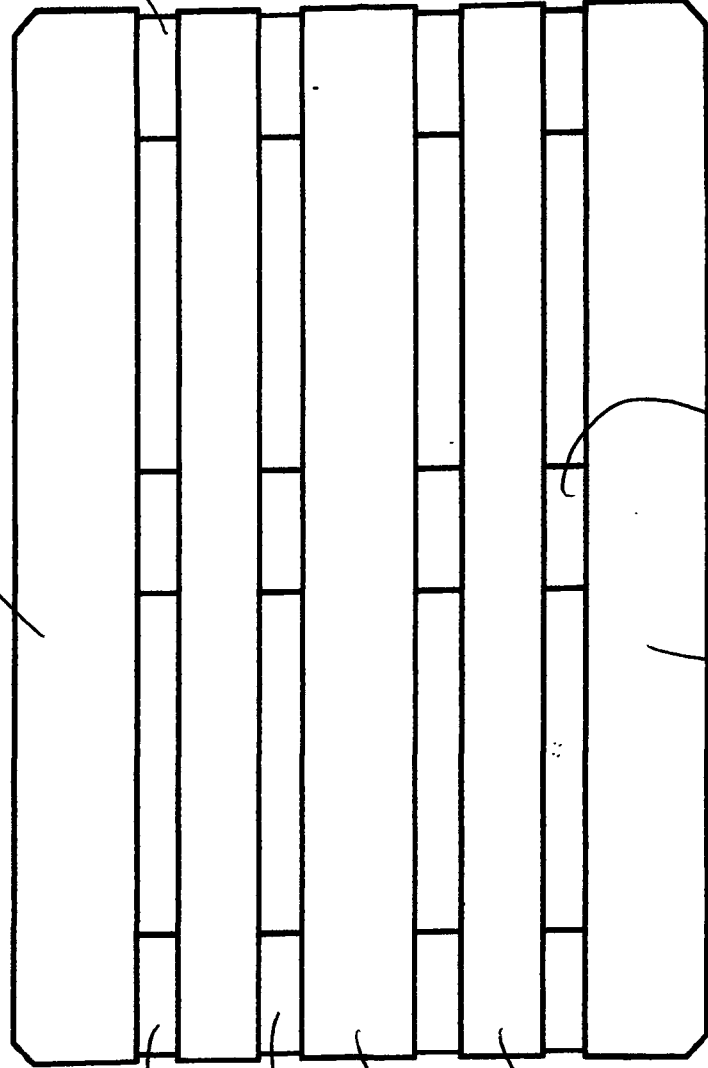


FIG 9C

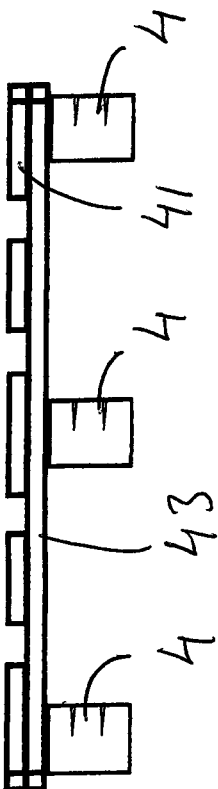


FIG 9A



FIG 9C

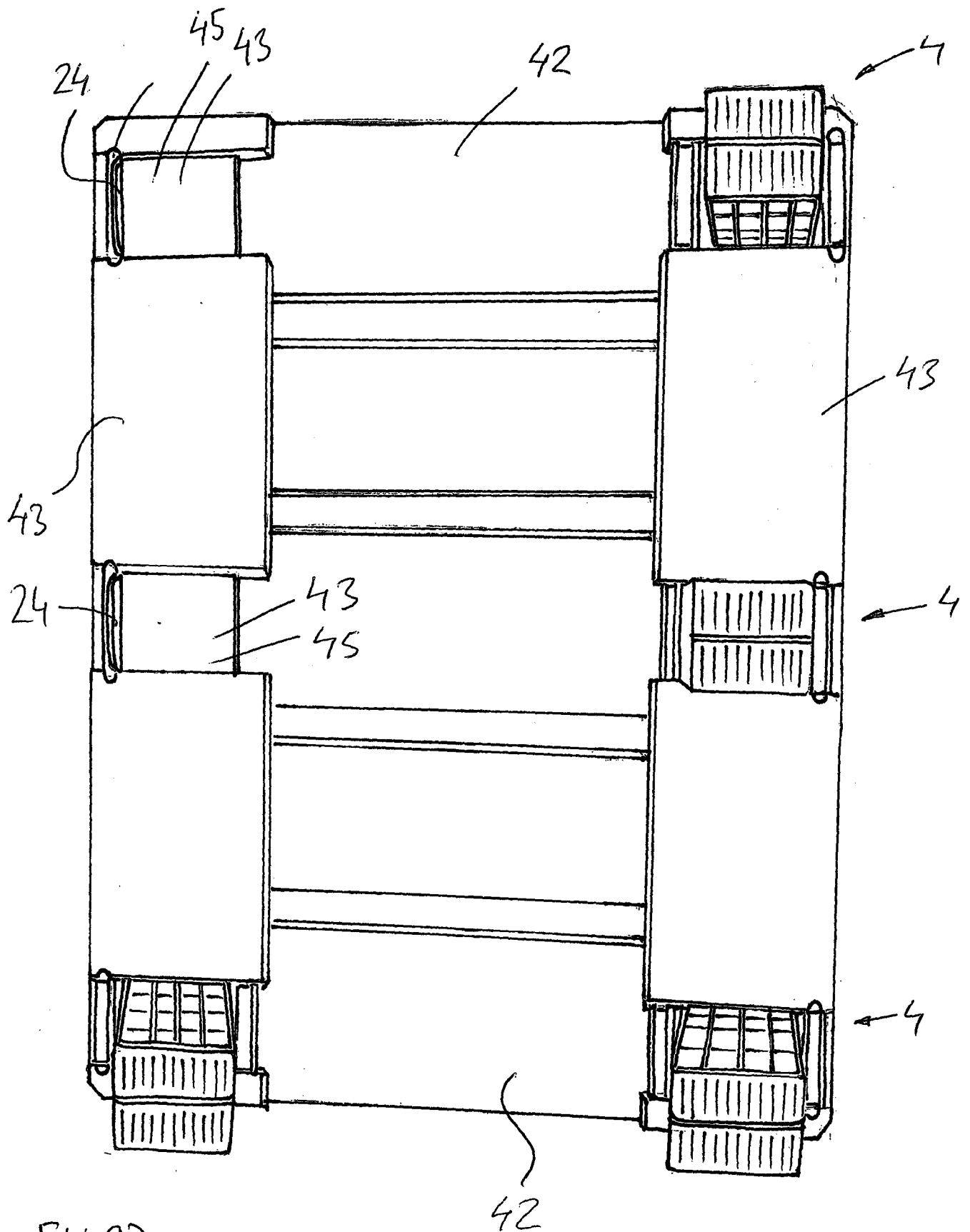


FIG 9D

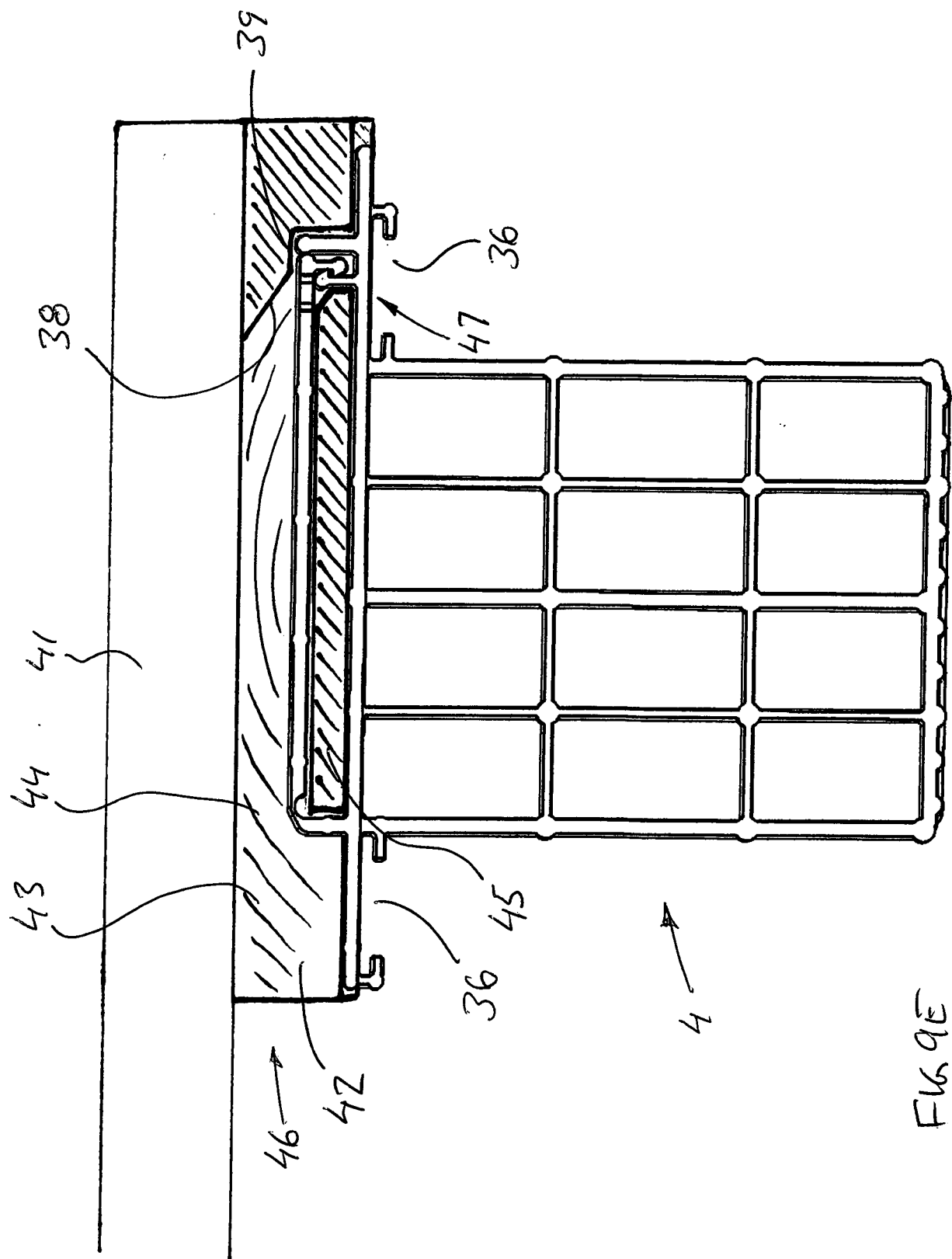
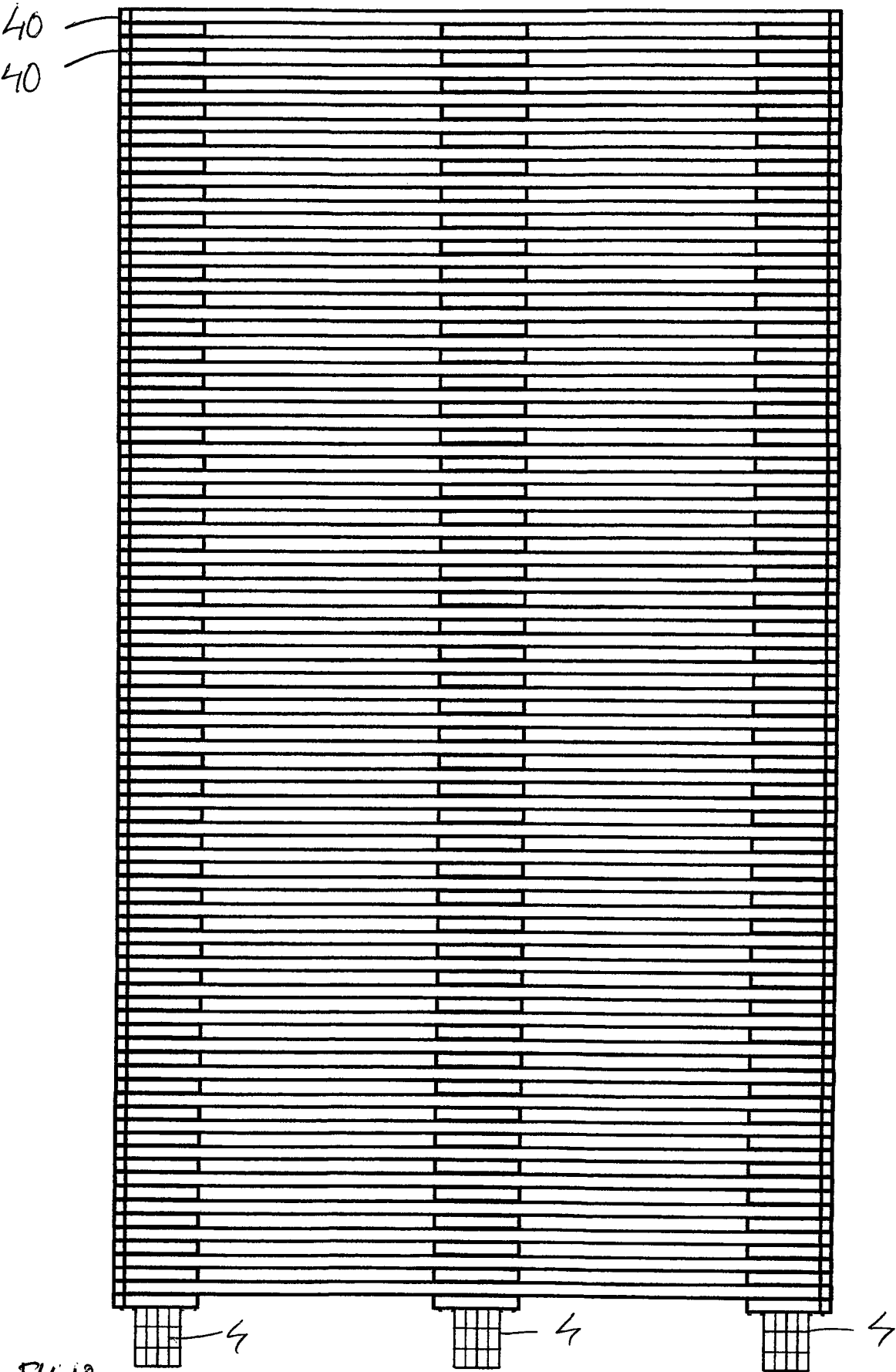


FIG. 9E



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2012/000140

A. CLASSIFICATION OF SUBJECT MATTER

IPC: 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: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2554087 A1 (ELECTRICITE DE FRANCE), 3 May 1985 (1985-05-03); page 2, line 16 - page 3, line 34; figures 1-4 --	1-5, 9, 10
Y	US 3168879 A (CLARK JR ALEXANDER B), 9 February 1965 (1965-02-09); column 1, line 67 - column 2, line 59; figures 1-3 --	1-5, 9, 10
A	FR 2765193 A1 (EMBALLAGES MONTBRISONNAIS SARL), 31 December 1998 (1998-12-31); abstract; figure 11 --	1-5, 9, 10
A	FR 2575726 A2 (DETOURNAY CLAUDE), 11 July 1986 (1986-07-11); abstract; figure 1 --	1-5, 9, 10



Further documents are listed in the continuation of Box C.



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

21-02-2013

Date of mailing of the international search report

22-02-2013

Name and mailing address of the ISA/SE

Patent- och registreringsverket
Box 5055
S-102 42 STOCKHOLM
Facsimile No. + 46 8 666 02 86

Authorized officer

Anette Hall

Telephone No. + 46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2012/000140

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2755103 A1 (EMBALLAGE CARTON SA), 30 April 1998 (1998-04-30); abstract; figures 1-3 --	1-5, 9, 10
A	GB 1005589 A (KARL DAHMEN), 22 September 1965 (1965-09-22); figures 1-3 --	1-5, 9, 10
A	FR 2138680 A1 (HOOKE LIONEL), 5 January 1973 (1973-01-05); figure 4 -- -----	1-5, 9, 10

Continuation of: second sheet**International Patent Classification (IPC)*****B65D 19/40*** (2006.01)***B65D 19/20*** (2006.01)***B65D 19/34*** (2006.01)***B65D 71/00*** (2006.01)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE2012/000140

FR	2554087 A1	03/05/1985	NONE			
US	3168879 A	09/02/1965	NONE			
FR	2765193 A1	31/12/1998	NONE			
FR	2575726 A2	11/07/1986	NONE			
FR	2755103 A1	30/04/1998	NONE			
GB	1005589 A	22/09/1965	NONE			
FR	2138680 A1	05/01/1973	AU	4208672 A	15/11/1973	
			DE	2223859 A1	07/12/1972	
			IT	958945 B	30/10/1973	
			ZA	7202754 A	31/01/1973	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2012/000140

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The following separate inventions were identified:

1: Claims 1-5, 9, 10 directed to a pallet system comprising a packaging and supporting block or feet connected to the packaging. The block or feet are provided with two connecting assemblies intended to be connected to at least two openings in the packaging. The claims also describes a use of a pallet system. The problems to be solved is to provide an improved pallet system for handling and transport of goods and the like and to

.../...

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-5, 9, 10

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

Continuation of: Box No. III

protect a straps or similar during handling of goods with a forklift or similar. The first problem is solved by connecting the feet to the pallet. The second problem is solved by providing the feet with a groove for straps.

2: Claims 6 and 7 directed to a pallet system comprising a pallet and supporting block or feet connected to the pallet. The problem to be solved by the technical features described in claims 6 and 7 is to provide an alternative pallet in a pallet system for handling and transport of goods and the like and also to protect a straps or similar during handling of goods with a forklift or similar. The first problem is solved by providing the pallet with a recess that cooperates with the connecting assemblies/devices provided on the block or feet. The second problem is solved by providing the feet with a groove for straps.

3: Claim 8 directed to a pallet system comprising a packaging and supporting feet connected to the packaging. The problem to be solved is to be able to stack pallet systems on top of each other. The problem is solved by providing pallet system with a lid with at least one positioning device, on which a second pallet system may be placed and positioned.

A partial search has been carried out, which relates to the invention 1 mentioned above.

The present application has been considered to contain three inventions which are not linked such that they form a single general inventive concept, as required by Rule 13 PCT for the following reasons:

The single general concept of the present application is to provide an improved pallet system for handling and transport of goods by a forklift and the like.

Document D1 is considered to represent the closest prior art. D1 describes supporting feet to be used for pallets and pallet boxes. The foot has a cylindrical body (1) with a base (2). A plate (4,5,6) at the top doubles over by means of it having a hinged portion (4). It has a fixing means (3) adapted to close by enveloping a zone of the support delimited for this purpose. The fixing means advantageously comprises, on either side of a hinge zone 4, a support panel 5 and a covering panel 6, fitted with means 7, 8, 9 of connection with releasable locking opposite the hinge zone. The upper half of the plate bears extensions (7) with clips (8,8') which snap into holes (9,9') in the lower part. The pallet base is of a thickness to enable cooperation with the supports, and has cut-outs at the edge to permit fasteners to pass through.

The device according to claim 1 differs from the device in D1 in that the foot includes at least one protective groove for straps or similar. Due to that feature, a possibility to protect a strap in conjunction with the handling of goods with a forklift or similar is achieved. Consequently, with the background of D1, the problem is to protect a strap in conjunction with the handling of goods with a forklift or similar.

A solution to the problem of achieving protection of the straps is known from document D2, which describes a pallet provided with feet with cut-out portion C therein to accommodate the relatively small tubular elements (10), so that the strapping may be received by the

.../...

Continuation of: Box No. III

relatively small tubular elements and passed upwardly over the articles forming a package, see figures 1-3.

Using the prior art of D1 as a starting point, a person skilled in the art trying to solve the problem of achieving protection for straps would, with the teachings of D2, modify the pallet system by providing the feet with a cut-out portion or a groove. A modification of the closest prior art found in D1, by using what is described in D2, would result in a system as defined in claim 1. Therefore, the skilled person faced with the problem of wanting to protect a strap in conjunction with the handling of goods with a forklift would modify the feet by providing them with a cut-out portion or a groove. Since no other technical effect than a pallet system with feet provided with a cut-out portion or a groove has been achieved, the subject matter defined in claim 1 is not considered to go beyond what can be expected from a person skilled in the art. Thus, the single general concept is obvious and cannot be considered as a single general inventive concept in the sense of Rule 13.1 PCT.

No other features can be distinguished which can be considered as the same or corresponding special technical features in the sense of Rule 13.2 PCT.

Thus, the application lacks unity of invention.