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(54) **Adjustable pallet system**

(57) A pallet system (1) having a deck (26) formed by at least two parallel deck boards (6) and at least one wing deck board (16). The deck boards (6) are part of a pallet (2) and are arranged on at least two stringer boards (8) forming at least one space (7) between the deck boards (6). The stringer boards (8) are arranged on

blocks (13). The wing deck board (16) is part of a wing (4) and has two opposite end portions (18, 24). One end portions (18) is arranged on at least one spacer (22) and the other end portion (24) is free. The wing (4) is placeable in the pallet (2) by placing the free end portion (24) of the wing deck board (16) in the space (7) between the deck boards (6) of the pallet (2).

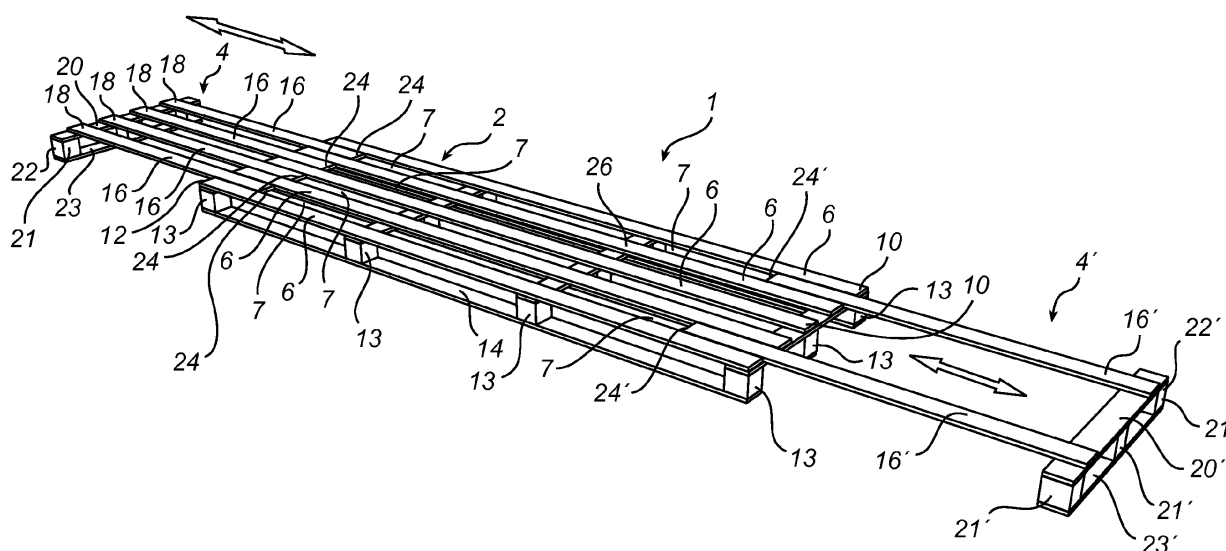


Fig. 1

Description

Field of the Invention

[0001] The present invention relates to a pallet system having a deck formed by at least two parallel deck boards. The present invention further relates to a method for establishing a pallet system having an adjustable deck size, and to use of such pallet system.

Background Art

[0002] Pallets are used for carrying goods and are shaped to be lifted by a fork lift truck or any other handling equipment provided with jaws. A pallet has a deck which has a number of, for instance five, deck boards. The deck boards are nailed on transversal stringer boards. The stringer boards are normally placed at the ends of the deck boards, possibly with one or several stringer boards there between, depending on the length of the pallet and stability demands. At least two blocks are arranged below each stringer board. The blocks are arranged on bottom deck boards which run parallel to the deck boards. Space between the deck boards and the bottom deck boards, created by the blocks, allows the jaws of a fork lift truck to be inserted whereby the pallet may be lifted. Pallets may be made of wood and may be of reusable type or expendable type. Pallets may be of standard dimensions, such as EUR-pallets, or have a special design to suit specific goods.

[0003] A problem with the pallets of today may arise if the goods loaded on the pallet do not correspond to the pallet deck size. Manufactures of for instance windows, building boards, and long goods such as beams may have to handle goods of different sizes frequently. If goods on a pallet occupy less area than the area of the deck of the pallet, load volume in a cargo space will be wasted since some of the cargo space area becomes air. The same problem may occur if goods having larger area than the pallet deck area is loaded since two pallets may then be placed next to each other and the goods may rest on two pallets. If the goods do not occupy the entire deck area of the two pallets the goods will not be kept on the pallets in an area efficient manner in a cargo space. A pallet system having to pallets arranged next to each other carrying a load may also be difficult to lift since it may be rickety in the gap between the two pallets.

[0004] US 2 972 463 discloses a pallet system having adjustable deck width. The adjustability is obtained by having two of the pallet deck boards arranged on separate stringer boards which may be moved with respect to the other deck boards of the pallet. A drawback with the pallet system in US 2 972 463 is that the construction requires a certain distance between two adjacent deck boards to allow an adjustable deck size. Moreover, the construction of the pallet system in US 2 972 463 is relatively complicated which increases complexity of the pallet manufacturing process.

Summary of the Invention

[0005] It is an object of the present invention to provide a pallet system which is uncomplicated and flexible and which has adjustable deck size in order to efficiently carry goods of different sizes. This object is achieved by a pallet system having a deck formed by at least two parallel deck boards and at least one wing deck board. The deck boards are part of a pallet and are arranged on at least two stringer boards forming at least one space between the deck boards. The stringer boards are arranged on blocks. The wing deck board is part of a wing and has two opposite end portions. One end portions of the wing deck board is arranged on at least one spacer and the other end portion of the wing deck board is free. The wing is placeable in the pallet by placing the free end portion of the wing deck board in the space between the deck boards of the pallet.

[0006] The size of the pallet system deck may easily be adjusted to obtain a desired deck size by placing the wing in the pallet such that the wing deck board is displaced with respect to the deck boards of the pallet. The pallet of the pallet system may be an ordinary pallet of an existing model and it is not necessary to modify an ordinary pallet to make it suitable for being a part of the pallet system. The pallet system implies that the pallet does not have to be adapted to be used without a wing if the goods is of a size or sort which does not require a wing. With respect to known pallet systems having adjustable deck size the pallet system has the advantage that the wing must only be placed in the pallet when a wing is necessary. Thus, the pallet system saves weight in relation to known pallet system with adjustable deck size since the wing is only placed in the pallet when it is necessary.

[0007] With respect to known pallet system with adjustable deck size and with respect to using two or more pallets next to each other, the pallet system saves material. The design of the wing allows a stable pallet system made from of less material than known pallets and pallet systems.

[0008] Other advantages of the pallet system are that it allows handling of fewer sorts of packaging since one pallet system is adaptable for several types and sizes of goods. For instance, a manufacturer of windows may only have to have one size of pallet and a wing and adjust the size of the pallet system to suit a particular window size. Another example of goods suitable for transporting on the pallet system is so called long goods, such as aluminium profiles made in several different lengths. Other examples include building boards and bench tops for kitchens, which are made in several different sizes specific for each building project.

[0009] The pallet system allows a cargo space to be used in a more efficient manner since several pallet systems may be loaded next to each other and each pallet system may be adjusted for its specific goods. Thereby, unnecessary pallet area in a transport or storage is elim-

inated.

[0010] The pallet system may have a rectangular deck. The length of the deck of the pallet system is determined by the location of the wing at the pallet. The width of the deck of the pallet system may be determined by the distance between the two end side deck boards. The length of the pallet system deck may be larger, equal to, or smaller than the width of the pallet system deck.

[0011] The pallet may have two, three, four five or more deck boards. For example, the pallet may have eight deck boards and the wing may have four wing deck boards. The pallet may, as well as the pallet system, have a rectangular shaped deck. The width of the pallet may be determined by the distance between the two end side deck boards, which is the same width as the width of the pallet system deck. The length of the pallet deck may be determined by the length of the deck boards. The length of the pallet deck may be larger, equal to, or smaller than the width of the pallet deck.

[0012] The wing or wings of the pallet system may, for example, have two or more wing deck boards. For example the pallet may have eight deck boards and the wing may have seven wing deck boards. The length of the wing deck boards sets the largest possible length of the pallet system. The wing deck boards may lay, unattached, between the deck boards of the pallet, be supported by one or several of the stringer boards of the pallet, and using the mass of the goods arranged on the pallet system to hold the wing in place. Alternatively, the wing may be attached to the pallet, for instance by nailing one or several of the wing deck boards to the stringer boards. The more stringer boards a pallet has, the more possible positions for attaching the stringer boards to the wing deck boards. The number of stringer boards may however be restrained by the lifting arrangement used for lifting the pallet system since each stringer board may have one or several blocks supporting the stringer board and to make the pallet stable. The distance between the blocks, and thus also between the stringer boards, settles which kind of lifting arrangement that is possible to use since the jaws of a fork lift truck or similar ought to be inserted through the openings between the blocks. For instance, a hand pallet truck, which may be the smallest fork lifter used for lifting the pallet system, may have 580 mm between the outer sides of the jaws why it may be suitable to place the blocks so that such lifting arrangement may be used between the blocks.

[0013] The wing of the pallet system is designed to be stackable. Since it is possible to place the wing in the pallet, one end of the wing deck board is free. A user of the pallet system, who orders a set of wings adapted for pallets existing at the user, may in an effective manner have the wings packed and transported since the wings are stackable in each other. Wings stacked in each other may be placed such that the upper side of a first wing stringer board is arranged against the lower side of another wing stringer board. The outside of the spacer of the first wing may then rest against or be supported of

the inner side of the spacer of the second wing. By outside, relating to the spacer, is meant the side of the spacer which is facing away from a pallet when a wing is used at the pallet in a pallet system. By inside, relating to the spacer, is meant the side of the spacer which is facing the blocks of the pallet when a wing is used at a pallet in a pallet system. More than two wings, for instance ten wings or more, may be stacked in this manner to save cargo space when transported to the pallet system.

[0014] In order for the pallet system to be stable the blocks may in usual manner be arranged on bottom deck boards. The bottom deck boards may run parallel to at least the two side deck boards of the pallet. The entire pallet system may be made of wood. Alternatively some portions of the pallet system may be made of wood.

[0015] According to one embodiment the length of the deck is adjustable by way of the wing being movable along the deck boards of the pallet. Thus, a pallet system having adjustable deck size is obtained.

[0016] The pallet comprises, according to one embodiment, at least three deck boards, wherein at least two spaces are formed between the deck boards, and wherein the wing comprises at least two wing deck boards each having an end portion arranged on a wing stringer board, wherein the other end portions are free and placeable in the space between the deck boards of the pallet. One advantage of having at least two wing deck boards is that the pallet system may be more stable than with one wing deck board. It is possible to have the same number of wing deck board as the number of spaces between the deck boards of the pallet. It is however not necessary that the number of wing deck board is the same as the number of spaces between the deck boards of the pallet. For instance, the pallet may have five deck boards arranged such that four spaces are formed between the deck boards. It may then be enough to have two wing deck boards which are placeable in two of the four spaces to establish a stable pallet system.

[0017] According to one embodiment the pallet system comprises an opposite wing which is placeable in the pallet at an opposite side of the pallet. By opposite wing is meant a wing of the same kind as the wing already existing in the pallet system. In other words, the opposite wing comprises at least one wing deck board which has two opposite end portions, wherein one of the end portions is arranged on at least one spacer and the other end portion is free. The opposite wing is placeable in the pallet by placing the free end portion of the wing deck board in the space between the deck boards of the pallet, at the side of the pallet which is opposite to the side where the existing wing is placeable. The two wings may be, but does not have to be, identical. Such pallet system having a pallet and two wings may allow further possibilities to adjust the size of the deck of the pallet system.

[0018] According to one embodiment, the wing deck board is of the same length or is shorter than the deck boards of the pallet. In such pallet system substantially the entire wing deck board may be inserted or placed in

the space between the deck boards of the pallet such that the pallet system with a pallet and a wing has a deck length which is substantially the same as the length of the deck boards of the pallet. According to another embodiment, the wing deck board is of the same length or is longer than the deck boards of the pallet. For the latter embodiment it is not possible to insert or place the entire the wing deck board between the deck boards of the pallet. However the maximum length of such pallet system is relatively long in comparison to the length of the deck of the pallet.

[0019] According to one embodiment, substantially the entire length of the wing deck board is moveable out from the space between the deck boards of the pallet such that the largest deck length of the pallet system is substantially the same as the sum of the length of the deck board of the pallet and the length of the wing deck board. By substantially the entire length of the wing deck board is meant that the wing deck board may be placed such that its free end portion is placed on the end stringer board of the pallet. In other words, the wing deck board and the deck boards of the pallet are overlapping at the end stringer board of the pallet but the remaining portion of the wing may be entirely outside of the pallet. It is not necessary to push or pull the wing out from the pallet, it may be lifted and placed at the end stringer board of the pallet.

[0020] According to one embodiment, the wing deck board is attachable to at least one stringer board of the pallet by means of fasteners. Suitable fasteners may be for instance one or several nails, screws, straps, belts, etc.

[0021] According to another aspect of the present invention the above mentioned object is achieved by a method for arranging a wing at a pallet to establish a pallet system having an adjustable deck size. The method comprises providing a pallet comprising at least two parallel deck boards arranged on at least two stringer boards forming at least one space between the deck boards, wherein the stringer boards are arranged on blocks; providing a wing comprising at least one wing deck board having two opposite end portions, wherein one of said end portions is arranged on at least one spacer and the other of said end portions is free; and placing the free end portion of the wing deck board in said space between the deck boards of the pallet.

[0022] Alternatively, the method may comprise adjusting the length of the deck of the pallet system by moving the wing along the deck boards of the pallet.

[0023] Alternatively, the method may comprise providing an opposite wing comprising at least one wing deck board which has two opposite end portions, wherein one of the end portions is arranged on at least one spacer and the other of the end portions is free; and placing the free end portion of the wing deck board of the opposite wing in the space between the deck boards of the pallet.

[0024] Alternatively, the method may comprise attaching at least one of the wing deck boards to at least one

of the stringer boards of the pallet by means of fasteners.

[0025] According to yet another aspect of the present invention, the present invention relates to use of a wing at a pallet to establish a flat deck having adjustable size. The wing comprises at least one wing deck board which has two opposite end portions, wherein one of the end portions is arranged on at least one spacer and the other is free. The pallet comprises at least two deck boards arranged on at least two stringer boards forming at least one space between the deck boards. The stringer boards are arranged on blocks. The wing is placeable in the pallet by placing the free end portion of the wing deck board in the space between the deck boards of the pallet.

15 Brief description of the Drawings

[0026]

Fig. 1 is a perspective view of a pallet system according to one embodiment of the present invention. Fig. 2a is a perspective view of a pallet system according to another embodiment of the present invention.

Fig. 2b is a perspective view of a pallet system shown in Fig. 2a.

Fig. 3 is a perspective view of a pallet system according to yet another embodiment of the present invention.

Fig. 4 is a perspective view of a several parts of the pallet system shown in Fig. 2a.

Fig. 5 is a perspective view of a pallet system according to yet another embodiment of the present invention.

35 Description of Preferred Embodiments

[0027] Fig. 1 shows a pallet system 1 according to one embodiment of the present invention. The pallet 2 shown in Fig. 1 does not have standard dimensions. However, the inventive idea applies to several sorts of pallets such as pallets having special dimensions as well as EUR-pallets or other pallets of standard dimensions. The pallet system 1 may be of reusable type or of expendable type.

[0028] The pallet system 1 disclosed in Fig. 1 consist of a pallet 2 and two wings 4, 4'. The pallet 2 in the disclosed example has five mutually parallel deck boards 6 arranged at a distance from each other such that four spaces 7 is established between the deck boards 6. The spaces 7 between the deck boards 6 have approximately the same width as, or are slightly wider than, the width of the deck boards 6. The deck boards 6 are nailed on five stringer boards 8, which are transversal to the deck boards 6. For clarity purposes the nails are not shown in Fig. 1. The pallet 2 in Fig. 1 is assembled in a usual, known, manner. The stringer boards 8 are arranged on even distances from each other, transversal to the deck boards 6, having one stringer board 8 at one of the deck board ends 10, and another stringer board 8 at the other

deck board end 12, and three stringer boards 8 arranged there between, on even distances from each other. It is possible to use fewer, or several more, stringer boards, depending on for instance the length of the deck boards 6 and other desired properties of the pallet 2. The stringer boards 8 are arranged on blocks 13. In the example shown in Fig. 1 each stringer board 8 is attached to three blocks 13. The blocks 13 are attached to bottom deck boards 14 in the form of boards running parallel to the deck boards 6. The pallet 2 in Fig. 1 has three bottom deck boards 14 of which two run below and parallel with each of the end deck boards 6 of the pallet 2 and one bottom deck board 14 runs below and parallel to the middle one of the deck boards 6 of the pallet 2.

[0029] The two wings 4, 4' shown in Fig. 1 are not identical. One 4 of the wings, the remotest in Fig. 1, comprises of four wing deck boards 16. One end 18 of each wing deck board 16 is nailed to a wing stringer board 20 which is transversal to the wing deck boards 16. The wing stringer board 20 are, in turn, nailed on three blocks 21. The blocks 21 of the wing 4 are placed at the middle and at the ends of the wing stringer board 20, respectively. The blocks 21 are attached to a common board 23 running parallel to the wing stringer board 20. The blocks 21 together with the wing stringer board 20 and the common board 23 serve as spacer 22 for the wing 4. The other ends 24 of the wing deck boards 16 are free and located in the space 7 between the deck boards 6 of the pallet 2. The width of the wing deck boards 16 should therefore be adapted to fit in the space 7. In the embodiments shown here boards of equal width and thickness have been used for the deck boards 16 of the pallet 2 and for the deck boards 16 of the wing 4. Therefore, the space 7 between the deck boards 6 of the pallet 2 is slightly larger than the width of the deck boards 6 in order for the wing 4 to be easily pushed into, or laid into, the pallet 2, and in order for the wing 4 to stay in place without sliding laterally, between the deck boards 6 of the pallet 2, even when the wing 4 is not nailed to the pallet 2.

[0030] The other wing 4' has the same structure as the above described wing 4, *i.e.* it has wing deck boards 16' with opposing end portions 18', 24' of which one 18' on each wing deck board 16' is arranged on a spacer 22' and the others 24' are free. The difference between the remote wing 4 and the front wing 4' shown in Fig. 1 is that the front wing 4' has two wing deck boards 16' instead of four. A wing 4' having two wing deck boards 16' may not be as stable or able to carry the same load as a wing 4 having four wing deck boards 16. However, a wing 4' having two wing deck boards 16' has lower weight than a wing 4 having four wing deck boards 16, which may be an advantage. Thus, the deck 26 of the pallet system 1 shown in Fig. 1 is made up by five deck boards 6 and the six wing deck boards 16, 16' of the two wings 4, 4'.

[0031] The wings 16, 16' are placed in the pallet 2 such that some of the space 7 between the deck boards 6 of the pallet 2 becomes occupied by the wing deck boards 16, 16'. The wing deck boards 16, 16' are moveable by

lifting the wings 4, 4' and laying them between the deck boards 6 of the pallet 2, or by pushing or pulling the wings 4, 4' along the deck boards 6 until they are at a desired position. The wings 4, 4' may be attached to the pallet 2 by for instance nails (see Fig. 2b) through the wing deck boards 16, 16' and through one or several of the stringer boards 8 of the pallet 2.

[0032] In order for the deck 26 to be flat the height of the blocks 13 together with the thickness of the bottom deck board 14 and the stringer boards 8 should be the same measure as the measure from the lower edge to the upper edge of the spacers 22, 22' of the wings 4, 4', provided that the deck boards 6 and the wing deck boards 16, 16' has the same thickness. If the spacers 22, 22', as shown in Fig. 1, consist of wing stringer boards 20, 20', blocks 21, 21' and common boards 23, 23', it may be suitable that the common boards 23, 23' of the wings 4, 4' has the same thickness as the bottom deck boards 14 of the pallet 2, the blocks 21, 21' of the wings 4, 4' has the same height as the blocks 13 of the pallet 2, and the wing deck boards 16, 16' has the same thickness as the deck boards 6 of the pallet 2. An alternative embodiment of the spacers 21 is shown and described below with reference to Fig. 3.

[0033] Fig. 2a and Fig. 2b show a pallet system 1 with a pallet 2 and a wing 4 assembled in the same manner as the pallet system 1 described above with reference to Fig. 1. The differences with the pallet system 1 shown in Fig. 1 and the pallet system 1 shown in Fig. 2a and Fig. 2b are that the pallet system 1 in Fig. 2a and Fig. 2b has shorter deck boards 6 and the pallet system 1 in Fig. 2a and Fig. 2b is only disclosed with one wing 4.

[0034] Fig. 2a discloses the pallet 2 and the wing 4 separated from each other. As is obvious from Fig. 2a the pallet 2 may be used without the wing 4 in a usual manner. The wing 4 may be used when necessary on account of the goods which are to be carried.

[0035] Fig. 2b discloses the pallet system 1 of Fig. 2a with the wing 4 arranged at the pallet 2. The length of the wing deck boards 16 are substantially the same as the length of the deck boards 6 of the pallet 2. The wing 4 is inserted in the spaces 7 between the deck boards 6 of the pallet 2 such that approximately half of the wing deck boards 16 are located in the spaces 7 between the deck boards 6 of the pallet 2 and the remaining of the wing 4 is located outside of the spaces 7. The length of the pallet system 1 deck 26 shown in Fig 2b is accordingly about 50% longer than the length of the pallet 2 deck without a wing 4. The wing 4 shown in Fig. 2b is nailed with nails 30 in two of the stringer boards 6 of the pallet 2, at two spots on each wing deck board 16, *i.e.* using eight nails 30 in total.

[0036] Fig. 3 discloses an alternative embodiment of a pallet system 1. The pallet system 1 in Fig. 3 is constructed in the same manner as the pallet system 1 shown in and described with reference to Fig. 2b, with the following differences. The pallet 2 in Fig. 3 has three deck boards 6, two bottom deck boards 14, four stringer boards

8, and four blocks 13 on each bottom deck board 14. Two of the stringer boards 8 are located at the ends 10, 12, respectively, of the deck boards 6 and the other two stringer boards 8 are located at the centre portion of the pallet 2. Such location of the stringer boards 8 allow the wing deck boards 16 to be nailed in two alternative positions in which the wing deck boards 16 are supported by two or three stringer boards 8, respectively. In the embodiment of the pallet system 1 shown in Fig. 3 the wing 4 is nailed using nails 30 through two of the stringer boards 8 of the pallet 2.

[0037] In addition, the wing 4 shown in Fig. 3 differs from the wings in Fig. 1, Fig. 2a and Fig. 2b in that the wing 4 in Fig. 3 has just two wing deck boards 16 and in that the spacer 22 comprises merely one stringer 22. The stringer 22 is placed such that the width of the stringer 22 constitutes the height of the wing 4 from the ground and up to the underside of the wing deck boards 16.

[0038] Thus, in order for pallet system 1 to have a flat deck 26, the width of the stringer 22 should correspond to the sum of the thickness of the deck board 6 and the bottom deck board 14 of the pallet 2 and the height of the blocks 13, provided that the deck boards 6 and the wing deck boards 16 are equally thick.

[0039] The configuration of the wing 4 allows several wings 4 to be transported stacked into each other, which is illustrated in Fig. 4 showing eight wings 4a-4h stacked into each other. The wings 4a-4h has the same appearance as the wings 4 disclosed and described above with connection to Fig. 2a and Fig. 2b. The lowest wing 4a in the pile of wings illustrated in Fig. 4 is placed with its wing deck boards 16a against the support, *i.e.* the ground or cargo space floor. The next wing 4b, in the pile of wings, is displaced laterally from the lowest wing 4a such that the wing deck board 16b of the second lowest wing 4b is placed in the spaces between wing deck boards 16a of the lowest wing 4a. The outside surface of the spacer 22b of the second lowest wing 4b is placed against the inside surface of the spacer 22a of the lowest wing 4a. The third and fourth wings 4c, 4d, in the pile of wings shown in Fig. 4, is placed in the same manner against each other as the first and the second wing 4a, 4b and are placed with the spacers at the free ends of the first and the second wing 4a, 4b. The third and the fourth wings 4c, 4d, are turned such that the upper side of the wing deck boards 16c, 16d are facing upwards. The pile of wings may be added with several more wings in the same manner. Fig. 4 shows four more wings 4e-4h which are stacked in the same manner as the wings 4a-4d and placed on top of the wings 4a-4d. The pile of wings may be held together for instance using a strap (not shown).

[0040] By outside, relating to the spacer 22, is meant the side of the spacer which is facing away from a pallet 2 when a wing 4 is used at the pallet 2 in a pallet system 1. By inside, relating to the spacer 22, is meant the side of the spacer which is facing the blocks 13 of the pallet 2 when a wing 4 is used at a pallet 2 in a pallet system 1. By upper side, relating to the wing deck boards 16, is

meant the side at which goods is placed in use of the pallet system 1 and by lower side, relating to the wing deck boards 16, is meant the side which faces the ground in use of the pallet system 1.

[0041] A user of the pallet system 1 may order a set of wings 4 adapted for her or his existing pallets 2. The wings 4 may effectively be packed together and transported to the user in the manner shown in Fig. 4. It is however realized that the configuration of the wings 4 allow the wings 4 to be packed in several different ways which are different from what is shown in Fig. 4 but still save space during transportation of the wings 4 separately.

[0042] Fig. 5 shows a pallet system 1 according to yet another embodiment. The pallet system 1 in Fig. 5 is constructed in the same manner as the pallet system 1 shown in and described with reference to Fig. 1, with the following differences. The pallet 2 in the pallet system 1 in Fig. 5 is short and wide. In other words, the deck boards 6 of the pallet 2 in Fig. 5 are shorter than its stringer boards 8. The pallet 2 in Fig. 5 comprises eight deck boards 6 and three stringer boards 8. The wing deck boards 16, 16' of the wings 4, 4' in Fig. 5 are longer than the deck boards 6 of the pallet 2. The wings 4, 4' shown in Fig. 5 has seven wing deck boards 16, 16' on each wing 4, 4'. In the same manner as described in the embodiments above, the deck boards 6 and the wing deck boards 16, 16' of the pallet system 1 has the same width. However, in the embodiment shown in Fig. 5 the distance between the deck boards 6 of the pallet 2 is twice the width of the deck boards 6 why the wing deck boards 16, 16' may be placed side by side in the same space 7 between the deck boards 6. Such an embodiment results in a pallet system 1 having two wings 4, 4' placed in a pallet 2 which pallet system 1 has a minimum deck length corresponding to the length of one of the wing deck boards 16, 16' even if both wings 4, 4' are placed in the pallet 2, which gives a stable pallet system 1. When the wings 4, 4' are placed as shown in Fig. 5, *i.e.* having the free ends 24, 24' of the wing deck boards 16, 16' against the middle stringer board 8 of the pallet 2, the pallet system 1 has a relatively long deck length but still the pallet system 1 is stable since the wing deck boards 16, 16' are supported by the pallet 2 and may be secured to the stringer boards 8 of the pallet 2 using nails (not shown in Fig. 5).

[0043] The pallet system 1 shown in Fig. 5, as well as the pallet system 1 shown in Fig. 2a and Fig. 2b, is a four way entry pallet system. Thus, a fork lift truck may optionally lift the pallet system 1 from four different ends, allowed thanks to the shape and position of the blocks 13 of the pallet 2 and of the spacers 22, 22' of the wings 4. In addition, the pallet system 1 shown in Fig. 1 is a four way entry pallet system. However, due to the pallet system dimensions, it may be difficult in practice to lift the pallet system 1 in Fig. 1 by having the jaws of a fork lift truck inserted along the wing deck boards 26, 26' if the wing decks boards 16, 16' are placed in the position

illustrated in Fig. 1. The pallet system 1 shown in Fig. 3 may be handled from three ends by a fork lift truck since the spacer 22 of the wing 4 restrains the jaws from lifting from the side of the pallet system 1 where the wing 4 is arranged.

[0044] The present invention is by no means limited to the above described embodiment but may be varied within the scope of the appended claims. For instance, the wings 4 shown in Fig. 2b and in Fig. 3 are nailed to two of the stringer boards 8 of the pallet 2. It is possible to attach the wing 4 to just one of the stringers 8 of the pallet 2, or to leave the wing 4 unattached and let the goods (not shown) placed on the deck 26 of the pallet system 1 keep the wing 4 at the pallet 2. Even though the wings 4, 4' in Fig. 1 and Fig. 5 are not illustrated as nailed to the pallet it is possible to nail the wings 4, 4', or arranged them in any other suitable manner, at the pallet 2.

[0045] The pallet 2 may be all wood, for example white-wood, and nailed together using galvanized nails 30 in known manner. It is also possible that some portions of the pallet 2, for instance the blocks 10, are made of another material such as plastic.

[0046] The wings 4, 4' described with reference to the drawings are assembled using nails, *e.g.* the wing deck boards 16, 16' are nailed to the wing stringer boards 20, 20', and the wing stringer boards 20, 20' and the common board 23, 23' is nailed to the spacers 21, 21' of the wing 4, 4'. Other suitable fasteners may be screws or glue.

[0047] The dimensions of the component parts of the pallet system 1 may be adapted for the area of use of the pallet system 1 and stability demands of the pallet system 1. For example, boards should not be restrained to a certain standard dimension for boards but any suitable dimension may be used for the boards as well as for the other component parts of a pallet 2 and a wing 4, 4' in a pallet system 1. The pallet system 1 may be suitable both as a reusable pallet system and an expendable pallet system.

Claims

1. Pallet system (1) having a deck (26) formed by at least two parallel deck boards (6) and at least one wing deck board (16), wherein the deck boards (6) are part of a pallet (2) and are arranged on at least two stringer boards (8) forming at least one space (7) between the deck boards (6), wherein the stringer boards (8) are arranged on blocks (13), and wherein the wing deck board (16) is part of a wing (4), wherein the wing deck board (16) has two opposite end portions (18, 24), wherein one (18) of said end portions (18, 24) is arranged on at least one spacer (22) and the other (24) of said end portions (18, 24) is free, wherein the wing (4) is placeable in the pallet (2) by placing the free end portion (24) of the wing deck board (16) in the space (7) between the deck boards (6) of the pallet (2).

2. Pallet system (1) according to claim 1, wherein the length of said deck (26) is adjustable by way of the wing (4) being movable along the deck boards (6) of the pallet (2).

3. Pallet system (1) according to anyone of the preceding claims, wherein the pallet (2) comprises at least three deck boards (6), wherein at least two spaces (7) are formed between the deck boards (6), and wherein the wing (4) comprises at least two wing deck boards (16) each having an end portion (18) arranged on a wing stringer board (20), wherein the other end portions (24) are free and placeable in said space (7) between the deck boards (6) of the pallet (2).

4. Pallet system (1) according to anyone of the preceding claims, comprising an opposite wing (4'), wherein the opposite wing (4') is placeable in the pallet (2) at an opposite side (32) of the pallet (2).

5. Pallet system (1) according to anyone of the preceding claims, wherein the wing deck board (16) is of the same length or is shorter than the deck boards (6) of the pallet (2).

6. Pallet system according to anyone of claims 1-4, wherein the wing deck board (16) is of the same length or is longer than the deck boards (6) of the pallet (2).

7. Pallet system (1) according to anyone of the preceding claims, wherein substantially the entire length of the wing deck board (16) is moveable out from the space (7) between the deck boards (6) of the pallet (2) such that the largest deck length of the pallet system (1) is substantially the same as the sum of the length of the deck board (6) of the pallet (2) and the length of the wing deck board (16).

8. Pallet system according to claim 4, wherein substantially the entire length of the wing deck boards (16) both wings (4, 4') is moveable out from said space (7) between the deck boards (6) of the pallet (2) such that the largest deck length of the pallet system (1) is substantially the same as the sum of the length of the deck board (6) of the pallet (1) and the length of the wing deck boards (16) for the wings (4, 4').

9. Pallet system (1) according to anyone of the preceding claims, wherein the wing deck board (16) is attachable to at least one stringer board (8) of the pallet (2) by means of fasteners (30).

10. Method for arranging a wing (4) at a pallet (2) to establish a pallet system (1) having an adjustable deck size, comprising:

- providing a pallet (2) comprising at least two parallel deck boards (6) arranged on at least two stringer boards (8) forming at least one space (7) between the deck boards (6), wherein the stringer boards (8) are arranged on blocks (13); 5
- providing a wing (4) comprising at least one wing deck board (16) having two opposite end portions (18, 24), wherein one (18) of said end portions (18, 24) is arranged on at least one spacer (22) and the other (24) of said end portions (18, 24) is free; and 10
- placing the free end portion (24) of the wing deck board (16) in said space (7) between the deck boards (6) of the pallet (2). 15

11. Method according to claim 10, further comprising:

- adjusting the length of the deck (26) of the pallet system (1) by moving the wing (4) along the deck boards (6) of the pallet (2). 20

12. Method according to anyone of the claims 10-11, further comprising:

- providing an opposite wing (4') comprising at least one wing deck board (16') which has two opposite end portions (18', 24'), wherein one (18') of said end portions (18', 24') is arranged on at least one spacer (22') and the other (24') of said end portions (18', 24') is free; and 25
- placing the free end portion (24') of the wing deck board (16') of the opposite wing (4') in said space (7) between the deck boards (6) of the pallet (2). 30

13. Method according to anyone of the claims 10-12, further comprising:

- attaching at least one of the wing deck boards (16, 16') to at least one of the stringer boards (8) of the pallet (1) by means of fasteners (30). 35

14. Use of a wing (4) at a pallet (2) to establish a flat deck (26) having adjustable size, said wing (4) comprising at least one wing deck board (16) which has two opposite end portions (18, 24), wherein one (18) of said end portions (18, 24) is arranged on at least one spacer (22) and the other (24) of said end portions (18, 24) is free; and said pallet (2) comprising at least two deck boards (6) arranged on at least two stringer boards (8) forming at least one space (7) between the deck boards (6), wherein the stringer boards (8) are arranged on blocks (13), wherein the wing (4) is placeable in the pallet (2) by placing said free end portion (24) of the wing deck board (16) in the space (7) between the deck boards (6) of the pallet (2). 45

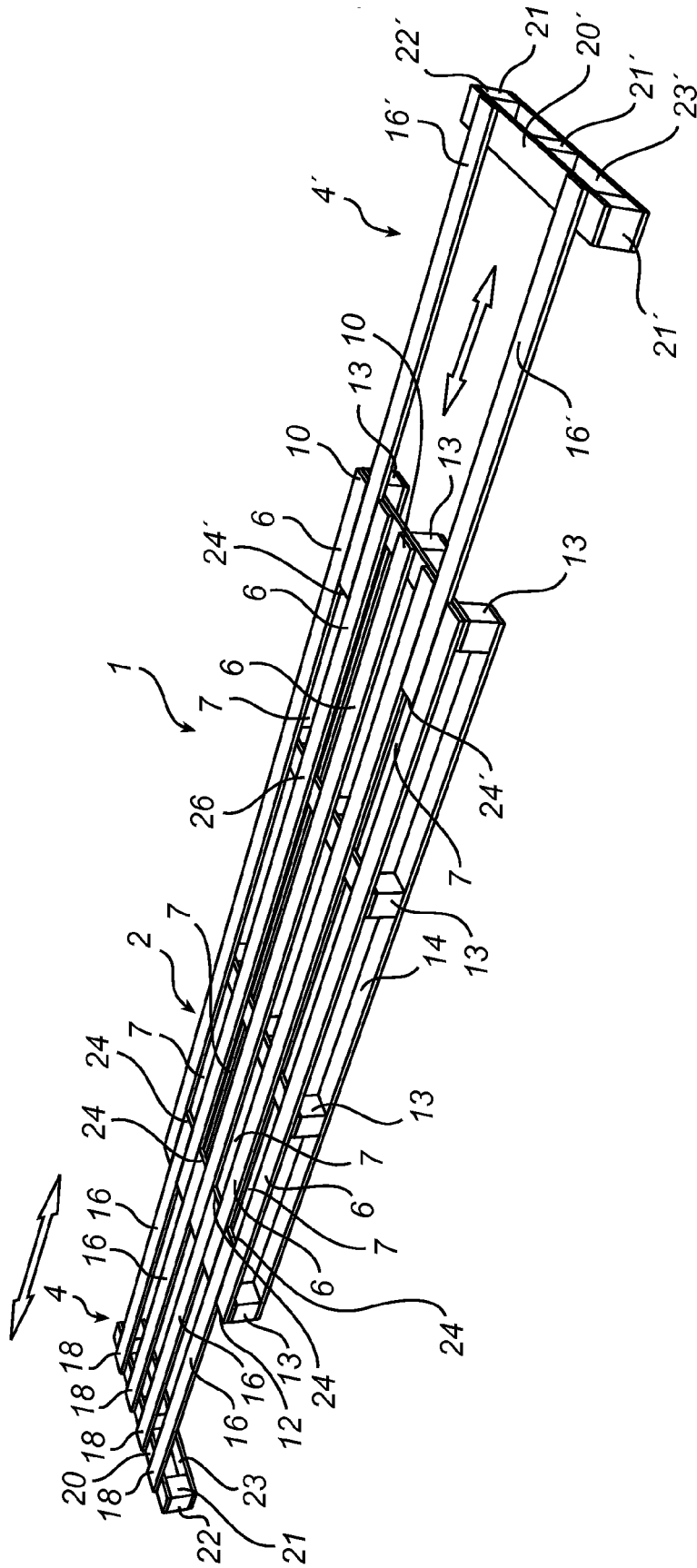


Fig. 1

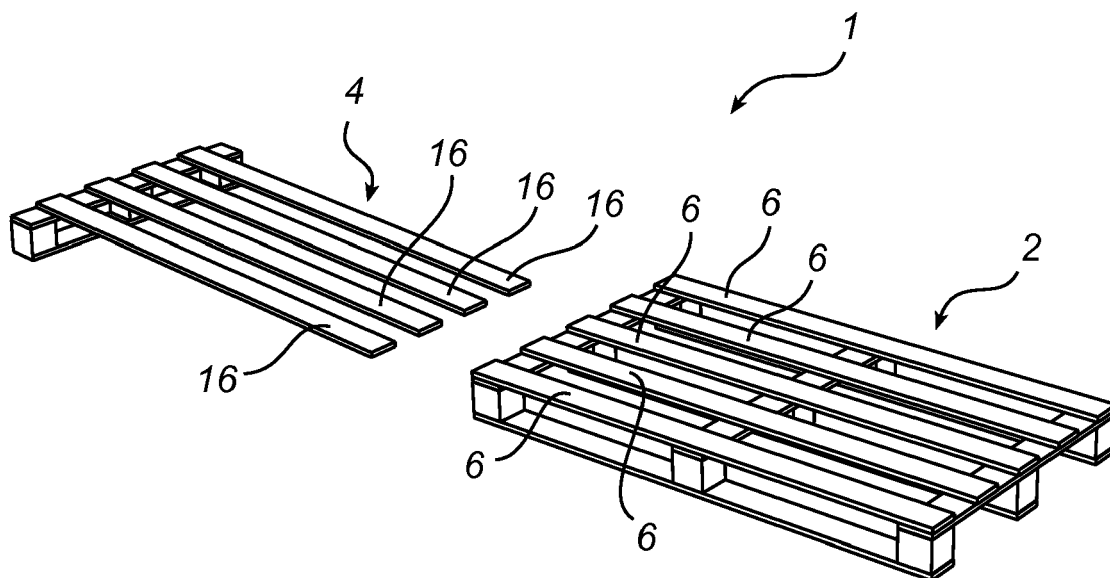


Fig. 2a

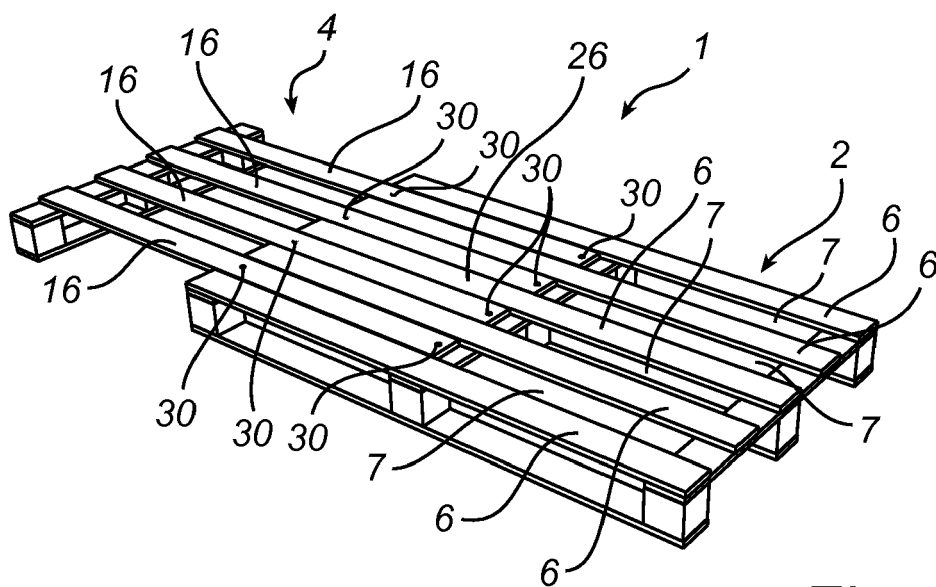


Fig. 2b

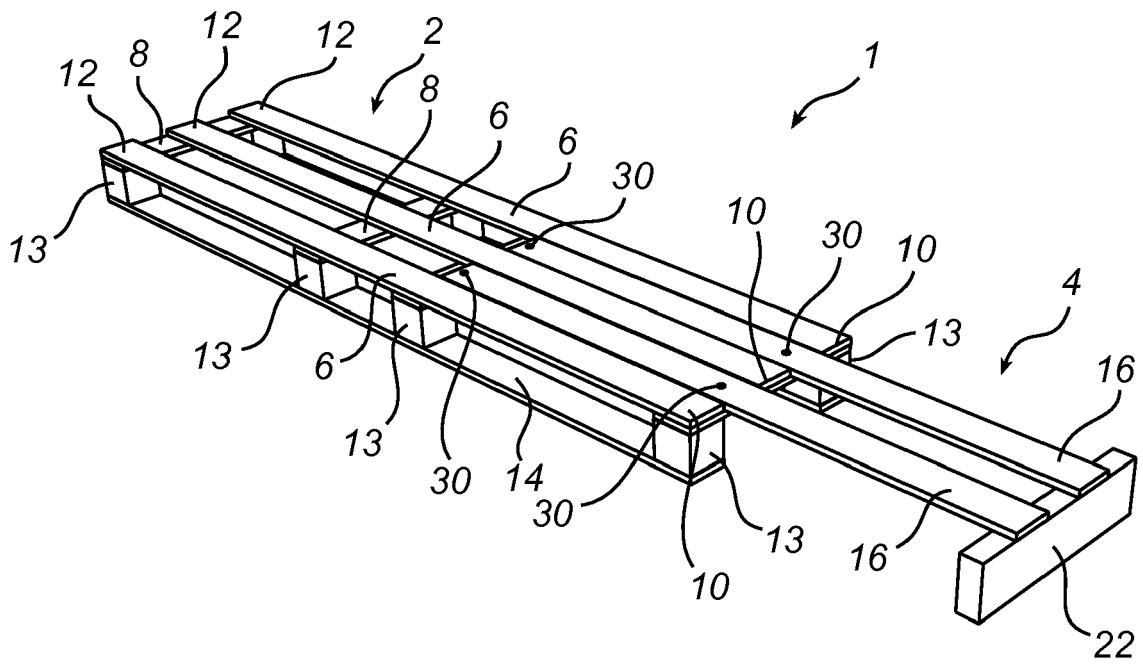


Fig. 3

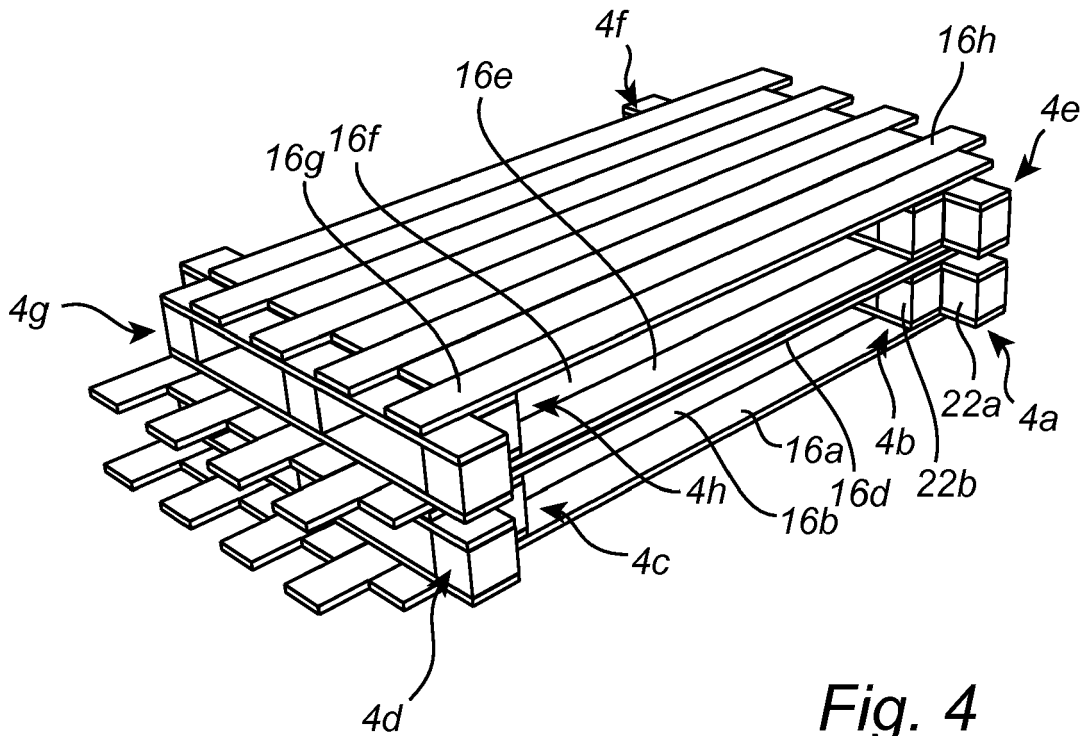


Fig. 4

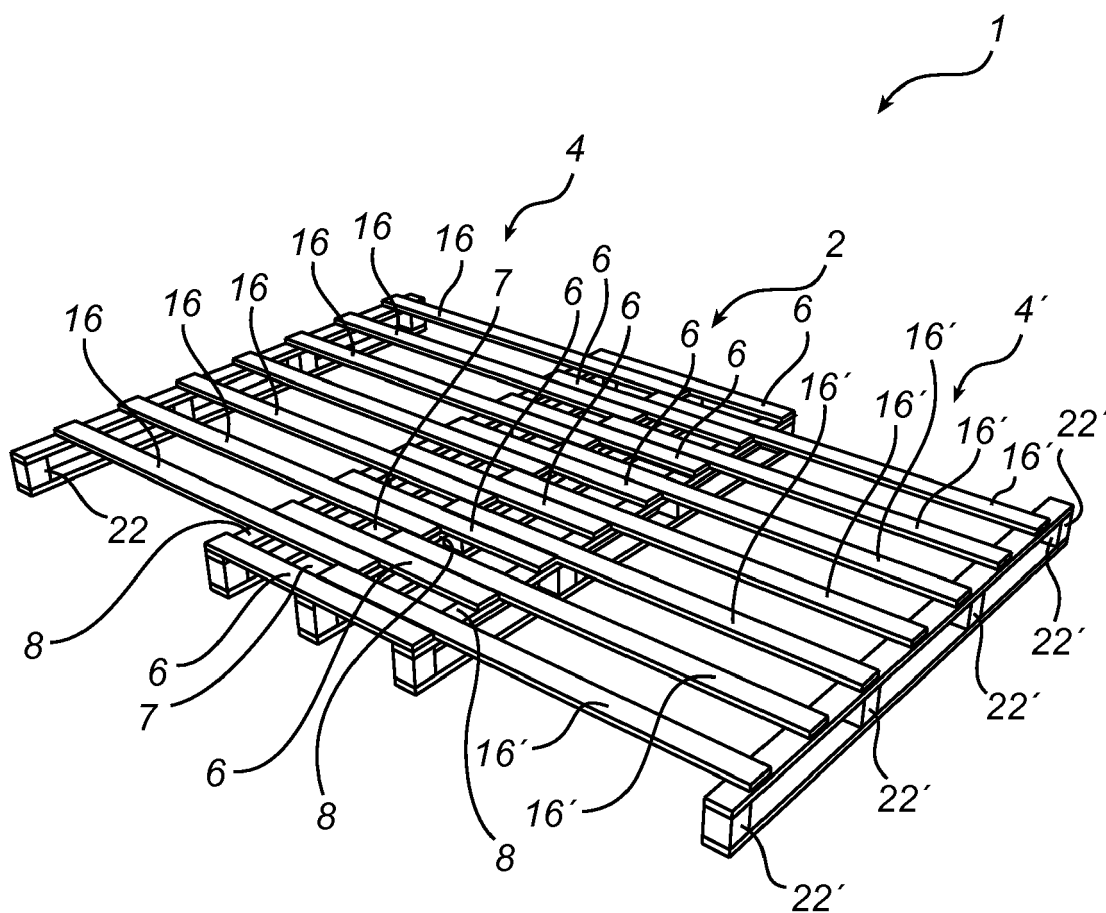


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 11 15 9069

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	JP 11 029145 A (SEKISUI PLASTICS; KOJIMA IND) 2 February 1999 (1999-02-02) * abstract; figures 1-3 *	1-14	INV. B65D19/31
Y	US 2 377 911 A (WARREN HUGH W) 12 June 1945 (1945-06-12) * page 1, column 2, line 38 - line 46; figures 1-5 *	1-3,5,6,9-11,13,14	
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A	US 622 666 A (BURWELL JOHN) 11 April 1899 (1899-04-11) * figures 1,2 *	1-14	
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			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 August 2011	Examiner Fitterer, Johann
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 11 15 9069

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25-08-2011

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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