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(54) **Pallet assembly formed of separable part pallets**

Zusammensetzung aus lösbaren Teilpaletten

Assemblage formé de parties de palettes séparables

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WO-A-99/64303 **FR-A- 2 157 171**
FR-A- 2 568 856 **FR-A- 2 585 671**

- **"DEELBAAR LAADPLATFORM" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 383, 1 March 1996 (1996-03-01), page 162 XP000581309 ISSN: 0374-4353**

EP 1 435 328 B2

Description

TECHNICAL FIELD

[0001] The present invention relates to a pallet having a load-bearing platform of given dimensions, composed of an integer number of part pallets being arranged adjacent to each other side by side, each part pallet having a load-bearing platform with spacers carrying the load-bearing platform. It additionally relates to the process for making such a pallet.

BACKGROUND OF THE INVENTION

[0002] Pallets are one of the most common means for storing goods for their transportation. Such palletised products can be transported using standard lifting tools and due to the standardised dimensions of such pallets, storage can be optimised easily. Generally prior to the use of the goods by the customer or prior to the presentation of goods in the stores, the goods are taken off the pallets, but in particular for uses where the goods have to be transported in smaller quantities for storage or to machines like a printing press, this is not always convenient. Also in the context of retailing presentation it has become increasingly popular to keep the goods directly on the pallets for their presentation and sale, which is usually not convenient with large pallets.

[0003] To the above purpose standards have been developed for the size and the general shape of pallets. In the US for example, pallets usually have a platform size of 48" x 40", which equals approximately 1220 x 1020 mm. One major standard in this respect is ISO 6780, defining the so-called Euro-pallet, which comes in dimensions of 1200 x 1000 x 145 mm.

[0004] But there is also restrictions as to the size of the pallets given by the load to be put on top of it, so for example in paper industry was sizes given by the size of the paper sheets to be stacked on the pallet. If for example a paper sheet has the dimension of 450 x 640 mm, one usually stacks two piles of such paper sheets adjacent to each other on to one pallet which must have a platform of approximately 920 x 660 mm.

[0005] However, not only for the direct presentation of goods stored on such pallets, but also for particular uses e.g. for the direct use of pallets for feeding machines like for example printing machines, these standard sizes are too large, which very often makes partial unloading necessary. Also to supply smaller retailers with palletised consumer goods is desirable but sometimes hardly possible with the standards.

[0006] Therefore there is a need for pallet segments, that are an aliquot portion of the standard sizes, like for example one half of the standard sizes (so-called twin pallet) or one quarter of the standard sizes. Ideally, such dividable pallets should be provided and charged in standard dimensions (however with a correspondingly divisible cargo) and should be separable into its parts either by the customer or just prior to delivering one half of the twin pallet to a customer.

[0007] US 4,694,962 describes a pallet assembly of standard dimension formed of separate abutted segments. The individual part pallets of such a product transport pallet are maintained assembled to form the pallet assembly of standard size by rigid members and metallic bands. This is achieved by mutual inter-engagement of abutting portions of the segments or by rigid members and clips to enable the segments and a divisible cargo of products contained on the pallet to be readily separated or split into segments for use of transport and/or display at a point of storage or sale.

[0008] The document FR-A-2 568 856 relates to a goods handling pallet according to the preamble of appended Claim 1, of the type comprising a floor and footpieces, connected by blocks disposed symmetrically with respect to a median plane of this pallet and between which may be engaged the fork prongs of a goods handling means parallel to the said median plane. According to the document, the pallet is constituted by two elementary pallets, which are connected in a detachable manner at the median plane by means of bent metal forks or which form one piece and are capable of being separated from each other at the position of fracture starter slits produced along the median plane.

[0009] The document WO-A- 99/64303 pertains to a pallet composed substantially of material recyclable more easily than wood, and of set of load mounting structures reusable in other pallets upon recycling of that material. Each set of load mounting structures comprises a reusable durable load mounting plate, a fastener, and a load anchor spaced in use from that load mounting plate. Also here, bent metal forks are used for joining adjacent pallets.

[0010] The document FR-A- 2 585 671 also relates to a pallet constituted by two elementary pallets which are integral with one another and comprising two series of blocks disposed symmetrically with respect to its median plane and offset towards the inside of the pallet with respect to the corresponding edges of the latter, whilst central blocks, preferably made of agglomerated wood or similar, in which are formed the said fracture starts at the level of the said median plane, are disposed in the central section of the pallet. Metal forks or metal ribbons are used for joining adjacent pallets.

[0011] The document FR-A-2 157 171 discloses a pallet constituted by two elementary pallets, the parts of which are joined temporarily by means of a buckle or clasp like element made of metal and which is firmly fixed to the blocks adjacent to each other.

[0012] The solutions according to the state of the art are however rather expensive and necessitate the use of particular parts/material for joining in a severable manner the individual part pallets together.

SUMMARY OF THE INVENTION

[0013] The objective problem underlying the present invention is therefore to provide an improved pallet as well as a method of its manufacture, having a load-bearing platform of given dimensions, which is composed of an integer number of part pallets being arranged adjacent to each other side by side. Each part pallet has a load-bearing platform with spacers carrying the load-bearing platform.

[0014] The present invention solves the above problem by providing means as defined in the characterizing part of appended claim 1.

[0015] The object of the present invention is therefore a product according to claim 1, and a process according to claim 12.

[0016] The key feature of the invention is therefore the fact that the connection between individual part pallets is provided using devices which are located on the lateral side surface of the spacers and exterior to the pallet, i.e. easily accessible from the side of the (charged) pallet. These connecting devices can therefore easily be detached or taken off the adjacent spacers thereby allowing the separation of the individual part pallets. While according to the state-of-the-art, plastic bands or metal bands are used for the connection of adjacent spacers, necessitating on the one hand expensive material for these bands and necessitating on the other hand complicated manufacturing steps for introducing such bands, the present invention not only provides a solution which allows very easy removal of the connecting means, but which is also particularly easy and cheap to produce, since the connecting means simply have to be attached from the side, which can either be done by the manufacturer of the pallet, or later at the moment when it is decided whether only part of the pallet is being charged or a standard pallet is needed.

[0017] In a first preferred embodiment of the present invention, the pallet is characterised in that it is composed of two symmetrical half pallets, wherein the line separating the two half pallets is preferentially perpendicular to the long-side of the pallet. Such a twin pallet, which in the case of the euro-pallet would mean that the individual part pallets have a platform size of approximately 600 x 500 mm, is generally the most convenient and useful partition of a pallet. However, it is also possible to join 3 or 4 part pallets to one pallet. Generally it is advisable for the stability of the platform to provide means on both sides of the pallet, i.e. on both pairs of spacers on opposite exterior sides of the pallet.

[0018] Preferentially, the means are provided in the form of a board, plate or disc, or a combination thereof. It is possible to provide means made of wood, metal or plastics, or a combination thereof. A particularly good stability is achieved when using a laminate of wood or plastics. With respect to ecological considerations it is advisable to use wood, i.e. a wooden board, for the connecting means, since as generally pallets are made of wood, the same material is being used for the connecting means and thus no separate channels of ecological disposal are necessary. Additionally, such a solution using wood is generally very cheap, not only with respect to the costs for the material, but also with respect to the manufacturing costs, since wood can very easily be processed and attached to the spacers.

[0019] If, according to another preferred embodiment of the invention, the means are provided in the form of a laminated wooden plate, this wooden plate can be chosen to have of a thickness in the range of 5-15 mm, preferentially of 9-12 mm. Preferentially the wooden plate has a width of in the range of 80-150 mm, preferentially of 90 - 120 mm, and a height of in the range of 80 - 150 mm, preferentially of in the range of 100 - 130 mm. These dimensions for example fit the shape and dimensions of the spacers as they are used in the context of euro-pallets.

[0020] The connecting means can be fixed to the spacers using various techniques, the only requirement being that if possible no particular and complicated tools are necessary for the later removal of the connecting means for the separation of the part pallets from each other. Possible are for example staples, nails, pins, pin drifts, bolts, or combinations thereof, but also screws etc. can be envisaged. In particular the use of staples is very cheap, provides high stability, and also provides ease of removal using simple tools like for example a bar, rod, a pinch bar, claw bar, wrecking bar etc. made of wood or steel. Also very simple tools like for example a screwdriver may be sufficient. Such a tool may alternatively also be incorporated into the connecting means, like e.g. a bar, stick or handle which is connected to the means and which without any additional tool thanks to leverage allows to manually detach the means from the spacers.

[0021] To allow easy removal of such a plate, it is advantageous to provide particular possibilities or auxiliary means for such a removal tool to grasp or engage with the plate such that the proper force can be exerted on the plate for its removal. Generally speaking such auxiliary means shall allow the removal of the connection making use of some leverage possible by using e.g. an inserted tool or the like.

[0022] Therefore according to the present invention, auxiliary means are provided for taking the connecting means off the spacers when such need arises. Of course, these auxiliary means should be freely and easily accessible from the exterior of the pallet also if the pallet is charged with a load. Preferably, the auxiliary means are given in the form of one or several recesses, holes, slots, plates with corresponding contact points or interaction points for tools, U-bolts or combinations thereof. These auxiliary means are intended to allow to introduce or mate with a tool for lifting off the connecting plate. In the case of a hole this hole for example has a width in the range of 15 - 50 mm, preferentially in the range of 30 - 40 mm, and a height of in the range of 10 - 30 mm, preferentially in the range of 15 - 25 mm. The hole may be square

shaped, rectangular, oval or circular or generally of any possible shape. A hole of these dimensions allows to introduce for example a pinch bar, claw bar, wrecking bar or the like and by some easy tilting of that bar to remove the connecting plate.

[0023] A particularly convenient way of providing means for removing the adjoining member between the two part pallets is possible by providing particular slots at the side of the spacers into which one can intrude with a corresponding tool like for example a screwdriver. So according to another preferred embodiment of the present invention, the auxiliary means are provided as at least one slot formed by recesses located on the lateral side surface exterior to the pallet of the spacers on the edge opposite to the side of the spacer facing the adjacent part pallet, wherein the means, usually a panel or a wooden board, have a width to substantially cover the recess giving rise to said slot. Analogously it is also possible to have standard spacers and panels or plates with on at least one lateral side a recess, and by fixing such a panel to the spacers the recess facing the spacers such as to form a slot. It is also possible to combine corresponding recesses on the spacers and on the panels to form slots. There can be one slot on one spacer only, but there may also be slots on both sides of the two adjacent spacers. The slots may either extend over the full height of the spacers, but they may also only extend over parts of this height. For example it is possible to have a small recess resulting in a hole-like slot that is intended for the introduction of a screwdriver or the like.

[0024] These slots can easily be produced by milling corresponding recesses into the spacers at the proper edges and with proper dimensions, and by subsequently just fixing standard not particularly designed wooden plates or wooden panels on top of the spacers, wherein these wooden panels or wooden boards have a width to substantially cover the recesses in the spacers. Preferentially the wooden panels or wooden boards are aligned with the side face of the spacers opposite to the side face that lies adjacent to the neighbouring part pallet.

[0025] Typically such a slot has a width of in the range of 3 to 10 mm and a depth of in the range of 6 to 16 mm. Preferentially the slot substantially extends over the full height of the spacer. The latter is particularly advantageous with respect to producing corresponding spacers, but it is of course also possible to provide slots that are not extending over the full height of the spacer thus increasing the stability.

[0026] Additional preferred embodiments of the present invention are outlined in the dependent claims.

[0027] The present invention also relates to a process for making or assembling a twin pallet as defined by appended claim 12.

[0028] According to a first preferred embodiment of the process, the means attached to the spacers are provided in the form of a laminated wooden plate of a thickness in the range of 5-15 mm, preferentially of 9-12 mm, wherein preferentially the wooden plate has a width of in the range of 80-150 mm, preferentially of 90 - 120 mm, and a height of in the range of 80 - 150 mm, preferentially of in the range of 100 - 130 mm. In particular if a wooden (laminated) plate is used for joining the spacers, generally between 5 and 7 staples (normally at least two per spacer) are sufficient to provide a tight connection between the spacers and the board. As outlined above, also bolts, or nails or screws can be used for fixing the means to the spacers.

[0029] According to the process according to the invention, the means are provided with auxiliary means for taking the means off the spacers, wherein these auxiliary means can either be provided/connected to the connecting means prior or after fixing these to the spacers. Of course, these auxiliary means should be accessible from the exterior of the pallet also if the pallet is charged with a load. Preferentially, the auxiliary means are given in the form of at least one recess, hole, slot, plate, U-bolt or a combination thereof.

[0030] Another preferred embodiment of the process according to the present invention is characterized in that either spacers are used which at the outer positions facing the adjacent part pallet are provided with recesses as once described above, or that prior to fixing the means in the form of a wooden panel or board to the spacers, recesses as described above are milled out of the spacers at the outer edges of the spacers.

[0031] Further embodiments of the process according to present invention are outlined in the dependent claims.

SHORT DESCRIPTION OF THE FIGURES

[0032] In the accompanying drawings preferred embodiments of the invention are shown in which:

Figure 1 a) shows a bottom view of a twin pallet; b) shows a side view (long-side) of a twin pallet without connecting means; c) shows a side view (short side) of a twin pallet; d) shows a side view (long-side) of a twin pallet with connecting means; e) shows a cut along the line A-A in figure 1a);

Figure 2 a)-d) show various cuts through connecting boards along the line B as indicated in figure 1a); e) shows a cut orthogonal to the once displayed in figure 2 d); and

Figure 3 a) shows another perspective view of another embodiment with a vertical slot which allows particularly easy lift-off of the joining board, b) with a horizontal slot, wherein the connecting board is not displayed, c) the embodiment of Fig. 3b) wherein the connecting board is displayed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0033] Referring to the drawings, which are for the purpose of illustrating the present preferred embodiments of the invention and not for the purpose of limiting the same, figure 1a) shows a bottom view of a twin pallet 1. The twin pallet is of a given full size, e.g., but not necessarily, a standard pallet according to ISO 6780, i.e. the Euro-pallet which is 1200 mm long (L), 1000 mm wide (W) and has a height (H) of in the range of 145 mm. Its main components are made of plain raw wood, joined together by nails and bolts. The pallet 1 consists of two twin pallets, a first half 7 and a second half 8. Each of these part pallets 7 and 8 has a platform of approximately 600 x 500 mm and a height of in the range of 145 mm. They are arranged adjacent to each other along their long-side. Each of these part pallets has two legs, a side leg and a central leg. The bottom member 2 of the side leg, which is a wooden board, is visible in figure 1a). The bottom member 2 has a width d of approximately 75 mm and a length corresponding to the width of the full pallet 1, i.e. of approximately 1000 mm. However, if the legs are not to extend to the very edge of the pallet, the bottom member 2 can also be shorter, i.e. have a length of in the range of 900 to 980 mm.

[0034] The central leg of the individual part pallets 7,8 is slightly more narrow, and the bottom boards 3 of these central legs, as visible in figure 1a), have a width q of approximately 45 - 55 mm, such that the full central leg of the whole joined pallet 1 has a width of approximately 110 mm maximum.

[0035] Visible in figure 1 a) is also the bottom side of the platform which can be charged, which bottom side is formed by a bottom layer 4 of wooden boards.

[0036] The two part pallets 7 and 8 are joined together by means of two connecting boards 6, which are attached to the spacers 10 of the central leg of each part pallets 7,8. The particulars related to these connecting boards 6 shall be discussed in more detail further below.

[0037] Figure 1b) shows a side view of the twin pallet according to figure 1a) along the long-side, wherein the connecting board 6 is omitted. Figure 1c) shows the corresponding view along the short side of the pallet according to figure 1a). It can be seen from these figures, that the side legs of each part pallet 7,8 are formed by spacers 9,11 on which the platform is mounted, and which are connected on their bottom side by the bottom member 2 of the side leg. Usually, these spacers are made of solid wood, and the bottom member 2 is bolted, nailed or stapled to these spacers. Also the central legs of each part pallet are formed by three spacers 10, the middle spacer 14 of which is visible on figure 1e). The central legs of each part pallet 7,8 are also connected on their bottom side by the bottom board 3. The spacers of the central leg are usually also made of solid wood and are connected as described above to the bottom board 3.

[0038] The platform of the pallet 1 is usually given by two layers of wooden boards, one bottom layer 4 and one top layer 5. In figure 1 a pallet is shown, of which both layers 4 and 5 are given by a series of adjacent boards, it is however also possible to have a pallet of which either one or even both of the layers 4, 5 are given by boards distanced from each other leaving gaps in between.

[0039] Figure 1d) shows a side view according to figure 1b) with the connecting boards 6 attached to the spacers 10. Figure 1e) shows a cut along the line A nurse displayed in figure 1a).

[0040] The board 6 is made of wood, it has a width a which approximately matches the width of the 2 adjacent spacers 10, 10'. Therefore the width a is in the range of 90 - 110 mm. The height b of the board 6 approximately matches the height of the spacers 10, 10', and is usually in the range of 90 - 120 mm. The necessary thickness c for the board 6 at least partially depends on the quality of wood chosen. If for example a laminated wood is used as the board 6, a thickness c of in the range of the 6-9 mm or up to 12 mm should be sufficient. Possible types of wood are for example packing-plywood panels or plates, wherein pine wood, beech wood, maple wood, birch wood or poplar can be used. As one can see from figure 1a) is as well as figure 1e) the central leg of the part pallets do not extend to the very edge of the pallet 1, so that the board can be attached to the spacers 10, 10' without them extending beyond the outline of the platform.

[0041] The board 6 is attached to the spacers 10 by staples 12, which are made of steel or some other iron alloy. The staples or splints extend about 20 mm into the spacers 10 such as to fix the board 6 tightly to the spacers. Typical staples used for this application are made of steel. They usually have legs of a length between 20 and 45 mm, typical standard sizes being 19/25/28/30/32/35/38/42/45 mm. Possible staples are for example available under the trade name Stanley Bostich. Generally the use of 3 staples 12 is sufficient to fix the board to one of the spacers 10, totalling to 6 staples for each board 6. The staples 12 are distributed e.g. on a triangle (as displayed in figure 1d) to make sure that the static requirements are fulfilled.

[0042] The board 6 is provided with a hole 13. This hole serves as a point of entrance or contact or mating point for a stick or rod for the removal of the boards 6. If the board 6 is to be lifted off the spacers 10, this is then easily possible by introducing for example a pinch bar into the hole, and by tilting the bar. Preferentially, this hole 13 is located centrally on the board 6, alternatively it is possible to provide more than one hole 13 or to locate the hole closer to the top or the bottom or to one of the sides of the board 6.

[0043] This hole 13, or generally auxiliary means, which serves as an aid for lifting off the board 6, can have a various different structures. Some examples of possible structures are displayed in figure 2. It has to be understood that the boards 6 as displayed in figures 2a)-d) are

attached such that the spacer 10 is located on the left side of the board 6 (see staple 12 in figure 1 a for illustration of this).

[0044] Figure 2a) shows the most simple solution, wherein a hole 13 is provided. To ease the attachment or grip of for example a pinch bar to the board 6, it is possible to additionally provide a recess 18, into which the pinch bar can be introduced and which allows to exert the force more effectively.

[0045] Figure 2b) shows an alternative, in which there is no hole but rather a slot 15 or recess which allows the introduction of a bar or some other tool if the board 6 is to be taken off.

[0046] Figure 2c) shows still another embodiment of the auxiliary means, in this case a hole 13 is provided, which is partially covered by a plate 16 which is bolted, nailed or stapled to the board 6. The corresponding slot into which a bar can be introduced eases the removal of the board 6.

[0047] Figure 2d) shows an embodiment, wherein the auxiliary means are given by some U-bolt, which is attached to the board 6 via screws or bolts 19. In this case the board 6 is just a plain board which does not have to be worked. All that has to be done is to attach such a U-bolt to the board. This can be done either prior to fixing the board 6 to the spacers or after that. The U-bolt, as displayed in figure 2e) from the top, provides a convenient hole 13 into which a bar can be introduced and which allows to exert an efficient force to lift off the board 6.

[0048] Figure 3 shows another example of a possibility of fixing the spacers 10 of adjacent part pallets 7/8. It is a perspective view and the load bearing surface construction has been removed for displaying the essential elements of this embodiment.

[0049] In this case, the spacers are provided with recesses on their outside face and on the edge opposite to the side facing the adjacent part pallet. On top, or rather on the side, of these spacers 10 there is provided a wooden panel 6 fixed to the spacers 10 by means of staples 12, which wooden panel overlaps with these recesses to form slots 20. Usually the wooden panel 6 more or less aligns with the side surface of the spacer which lies opposite to the side surface of the spacer which is facing the neighbouring part pallet.

[0050] To lift of such a panel 6 off for separation of the part pallets 7 and 8, one just has to introduce for example a screwdriver into the slot 20, to tilt the screwdriver away from the pallet, and by the resulting leverage to lift the panel off. For this to work, such a slot 20 should have a width e in the range of 3 to 10 mm and a depth d in the range of between 6 and 16 mm. Deeper slots are usually not advantageous since they reduce the overall stability of the attachment of the board to the spacer and thus of the attachment of the two part pallets to each other.

[0051] Another preferred embodiment is shown in figure 3b), wherein in this particular display, the connecting board 6 has been omitted to allow better visibility of the important features. In this case, the slot 20 is formed by a horizontal groove located on the lateral side surface of the spacer exterior to the pallet. The groove has a height f which is in the range of 3mm to 40 mm. The height has to be large enough to allow the introduction of the corresponding tool, for example is screwdriver, but small enough not to give rise to too large a reduction in stability of the connection between the connecting board 6 and the spacers 10. This groove extends preferentially over the full width of each of the spacers, and the production of such grooves is particularly easy, if the grooves on both spacers 10 are located at the same height. Of course, it is also possible to provide such a groove only on one of the spacers 10.

[0052] Figure 3c) shows the same embodiment as in figure 3b), wherein in this case the connecting board 6 is shown as well. It can now be seen that the groove in combination with the connecting board 6 forms a slot 20, with a depth extending over the full width of the two spacers 10. This is not only an embodiment which is particularly easy and cheap to produce, but it also allows to introduce for example a screwdriver very deeply into that slot and correspondingly allows a particularly efficient leverage to take off the connecting board 6.

LIST OF REFERENCE NUMERALS

[0053]

1	pallet
2	bottom member of side leg
3	bottom member of central leg
4	bottom layer of platform
5	top layer of platform
6	connecting board
7	first half of the twin pallet
8	second half of the twin pallet
9	spacer of side leg (comer)
10	spacer of central leg
11	spacer of side leg (middle)
12	staple
13	recess, hole
14	spacer of central leg (middle)
15	slot

16 bolted plate

17 U-bolt

18 additional recess

19 screw, bolt

20 slot

L length of the pallet

W width of the pallet

H height of the pallet

d width of 2

q width of 3

a width of 6

b height of 6

c thickness of 6

d depth of 20

e width of 20

Claims

1. A pallet (1) having a load-bearing platform (4,5), composed of an integer number of part pallets (7,8) being arranged adjacent to each other side by side, each part pallet (7,8) having a load-bearing platform with spacers (9,10) carrying the load-bearing platform (4,5), wherein means (6) are provided connecting adjacent spacers (10,10') of adjacent part pallets (7,8) on their lateral side surface exterior to the pallet (1), and wherein said means (6) are detachably connected to the adjacent spacers (10,10'),
the means (6) being provided in the form of a panel, board, plate or disc, or a combination thereof, **characterised in that** the means (6) are connected to the spacers (9,10) by means of staples (12), nails, bolts, or combinations thereof, wherein the means (6) or the spacers (9,10) are provided with auxiliary means (13,15, 16,17,18) for taking the means (6) off the spacers (10,10'), and wherein these auxiliary means are accessible from the exterior of the pallet (1) also if the pallet is charged with a load.

2. Pallet (1) according to claim 1, **characterised in that** it is composed of two symmetrical half pallets (7,8), wherein the line separating the two half pallets (7,8) is preferentially perpendicular to the long side of the pallet (1), and wherein means (6) are provided in both sides of the pallet (1).

3. Pallet (1) according to one of the preceding claims, **characterised in that** the means (6) are made of wood, metal or plastics, or a combination thereof, wherein preferentially a laminate of wood or plastics is used.

4. Pallet (1) according to one of the preceding claims, **characterised in that** the means (6) are provided in the form of a preferentially laminated wooden plate (6) of a thickness (c) in the range of 5-15 mm, preferentially of 9-12 mm, wherein preferentially the wooden plate (6) has a width (a) of in the range of 80-150 mm, preferentially of 90 - 120 mm, and a height (b) of in the range of 80 - 150 mm, preferentially of in the range of 100 - 130 mm.

5. Pallet (1) according to one of the preceding claims, **characterised in that** the legs of the staples (12) preferentially have a length of in the range of 15 to 45 mm and are made of steel.

6. Pallet (1) according to claim 1, **characterised in that** the auxiliary means (13, 15, 16, 17, 18) are given in the form of at least one recess, hole (13), slot (15,20), plate (16), U-bott (17) or a combination thereof.

7. Pallet (1) according to claim 6, **characterised in that** in the case of a hole (13) this hole has a width in the range of 15 - 50 mm, preferentially in the range of 30 - 40 mm, and a height of in the range of 10 - 30 mm, preferentially in the range of 15 - 25 mm.

8. Pallet (1) according to claim 6, **characterized in that** the auxiliary means are provided as at least one slot (20) formed by recesses located on the lateral side surface exterior to the pallet of the spacers (9,10) on the edge opposite to the side of the spacer facing the adjacent part pallet, wherein the means (6) have a width (a) to substantially cover the recess giving rise to said slot (20).

9. Pallet (1) according to claim 8, **characterized in that** the slot (20) has a width (e) of in the range of 3 to 10 mm and a depth (d) of in the range of 6 to 16 mm, wherein preferentially the slot (20) substantially extends over the full height of the spacer (9,10).

10. Pallet (1) according to claim 6, **characterized in that** the auxiliary means are provided as at least one slot (20) formed by grooves located on the lateral side surface exterior to the pallet of the spacers (9,10), wherein the means (6) have a width (a) to substantially cover the grooves giving rise to said slot (20).

11. Pallet (1) according to claim 10, **characterized in**

that the slot (20) has a width (e) of in the range of 3 to 10 mm, a height (f) of in the range of 3 to 40 mm and a depth extending over the full width of the spacers.

12. Process for making a twin pallet (1) the individual parts (7,8) of which can be detached from each other by means of removal of means (6) connecting adjacent spacers (10,10') of adjacent part pallets (7,8) on their lateral side surface exterior to the pallet (1), wherein two part pallets (7,8) are put adjacent to each other and subsequently adjacent spacers (10,10') of adjacent part pallets (7,8) are connected together by means of bolting, stapling or nailing the means (6) on to the lateral side surface exterior to the pallet, wherein the means (6) are provided in the form of a panel, board, plate or disc, or a combination thereof, wherein the means (6) or the spacers (9,10) are provided with auxiliary means (13, 15, 16, 17, 18) for taking the means (6) off the spacers (10,10'), and wherein these auxiliary means are accessible from the exterior of the pallet (1) also if the pallet is charged with a load and wherein preferentially such means (6) are provided on both sides of the twin pallet (1).

13. Process according to claim 12, **characterised in that** the means (6) are provided in the form of a preferentially laminated wooden plate (6) of a thickness (c) in the range of 5-15 mm, preferentially of 6-12 mm, wherein preferentially the wooden plate (6) has a width (a) of in the range of 80-150 mm, preferentially of 90 - 120 mm, and a height (b) of in the range of 80 - 150 mm, preferentially of in the range of 100 - 130 mm.

14. Process according to one of the claims 12, or 13, **characterised in that** between 4 and 10, preferentially between 5 and 7 staples (12), bolts, or nails are provided for fixing the means (6) to the spacers (10,10').

15. Process according to one of the claims 12 - 14, **characterised in that** the auxiliary means are given in the form of at least one recess, hole (13), slot (15,20), plate (16), U-bolt (17) or a combination thereof.

16. Process according to claim 15, **characterized in that** spacers (9,10) are used which at the outer positions facing the adjacent part pallet are provided with recesses or grooves according to one of the claims 8 or 9 or 10 or 11 respectively, or that prior to fixing the means in the form of a wooden panel or board (6) to the spacers (9,10), recesses or grooves according to one of the claims 8 or 9, or 10 or 11 respectively, are milled out of the spacers (9,10) at the outer edges of the spacers, or on the lateral side surface exterior to the pallet of the spacers, respectively.

17. Process according to any of claims 12-16 for making a twin pallet according to any of claims 1-11.

Patentansprüche

1. Palette (1) mit einer Trageplattform (4,5), aufgebaut auf einer ganzen Zahl von Teil-Paletten (7,8), welche in angrenzender Weise nebeneinander angeordnet sind, wobei jede Teil-Palette (7,8) eine Trageplattform aufweist mit Beabstandungselementen (9,10), welche die Trageplattform (4,5) tragen, wobei Mittel (6) vorgesehen sind zur Verbindung von benachbarten Beabstandungselementen (10,10') von benachbarten Teil-Paletten (7,8) an deren lateraler Seitenfläche, welche der Aussenseite der Palette (1) zugewandt ist, und wobei diese Mittel entfernbar mit den benachbarten Beabstandungselementen (10,10') verbunden sind, wobei die Mittel (6) in Form einer Tafel, eines Brettes, einer Platte oder Scheibe oder einer Kombination davon vorgesehen sind, **dadurch gekennzeichnet, dass** die Mittel (6) an den Beabstandungselementen (9,10) unter Zuhilfenahme von Klammern (12), Nägeln, Bolzen oder Kombinationen davon befestigt sind, wobei die Mittel (6) oder die Beabstandungselemente (9,10) mit Hilfsmitteln (13,15,16,17,18) versehen sind für die Entfernung der Mittel (6) von den Beabstandungselementen (10,10'), und wobei diese Hilfsmittel zugänglich sind von der Aussenseite der Palette (1), auch wenn die Palette mit einer Last beladen ist.

2. Palette (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** sie aus zwei symmetrischen Halb-Paletten (7,8) aufgebaut ist, wobei die Trennlinie zwischen den beiden Halb-Paletten (7,8) vorzugsweise senkrecht zur langen Seite der Palette (1) liegt, und wobei Mittel (6) auf beiden Seiten der Palette (1) vorgesehen sind.

3. Palette (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel (6) aus Holz, Metall oder Plastik oder einer Kombination davon gefertigt sind, wobei vorzugsweise ein Laminat aus Holz oder Plastik verwendet wird.

4. Palette (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel (6) in Form einer vorzugsweise laminierten hölzernen Platte (6) mit einer Dicke (c) im Bereich von 5-15 mm, vorzugsweise von 9-12 mm, vorgesehen sind, wobei vorzugsweise die hölzerne Platte (6) eine Breite (a) im Bereich von 80-150 mm, vorzugsweise von 90-120 mm, und eine Höhe (b) im Bereich von 80-150 mm, vorzugsweise im Bereich von 100-130 mm aufweist.

5. Palette (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Schenkel der Klammern (12) vorzugsweise eine Länge im Bereich von 15 bis 45 mm aufweisen und aus Stahl gefertigt sind.

6. Palette (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Hilfsmittel (13,15,16,17,18) in Form wenigstens einer Aussparung, eines Loches (13), einem Schlitzes (15, 20), einer Platte (16), eines U-Bolzens (17) oder einer Kombination davon gegeben sind.

7. Palette (1) nach Anspruch 6, **dadurch gekennzeichnet, dass** im Fall eines Lochs (13) dieses Loch eine Breite im Bereich von 15-50 mm, vorzugsweise im Bereich von 30-40 mm, und eine Höhe im Bereich von 10-30 mm, vorzugsweise im Bereich von 15-25 mm, aufweist.

8. Palette (1) nach Anspruch 6, **dadurch gekennzeichnet, dass** die Hilfsmittel als wenigstens ein Schlitz (20) vorgesehen sind, gebildet durch Aussparungen, welche auf der lateralen, der Aussenseite der Palette zugewandten Seitenfläche der Beabstandungselemente (9,10), an der Kante, welche der Seite des Beabstandungselementes gegenüberliegt, die der benachbarten Teil-Palette zugerichtet ist, angeordnet sind, wobei die Mittel (6) eine Breite (a) aufweisen, so dass sie im Wesentlichen die Aussparung bedecken, was zur Bildung des genannten Schlitzes (20) führt.

9. Palette (1) nach Anspruch 8, **dadurch gekennzeichnet, dass** der Schlitz (20) eine Breite (e) im Bereich von 3 bis 10 mm und eine Tiefe (d) im Bereich von 6 bis 16 mm aufweist, wobei vorzugsweise der Schlitz (20) sich im Wesentlichen über die volle Höhe des Beabstandungselementes (9,10) erstreckt.

10. Palette (1) nach Anspruch 6, **dadurch gekennzeichnet, dass** die Hilfsmittel als wenigstens ein Schlitz (20) vorgesehen sind, gebildet durch Nuten, welche auf der lateralen, der Aussenseite der Palette zugewandten Seitenfläche der Beabstandungselemente (9,10) angeordnet sind, wobei die Mittel (6) eine Breite (a) aufweisen, so dass sie im Wesentlichen die Nuten bedecken, was zur Bildung des genannten Schlitzes (20) führt.

11. Palette (1) nach Anspruch 10, **dadurch gekennzeichnet, dass** der Schlitz (20) eine Breite (e) im Bereich von 3 bis 10 mm, eine Höhe (f) im Bereich von 3 bis 40 mm und eine Tiefe, welche sich über die volle Breite der Beabstandungselemente erstreckt, aufweist.

12. Verfahren zur Herstellung einer Doppelpalette (1), deren individuelle Teile (7,8) voneinander gelöst werden können unter Zuhilfenahme der Entfernung von Mitteln (6), welche benachbarte Beabstandungselemente (10,10') von benachbarten Teil-Paletten (7,8) an deren lateraler Seitenfläche, welche der Aussenseite der Palette (1) zugewandt ist, verbinden, wobei zwei Teil-Paletten (7,8) nebeneinander angeordnet werden und anschliessend benachbarte Beabstandungselemente (10,10') von benachbarten Teil-Paletten (7,8) miteinander verbunden werden unter Zuhilfenahme von Bolzen, Klammern oder Nägeln, mittels welcher die Mittel (6) an der lateralen, der Aussenseite der Palette zugewandten Seitenfläche befestigt werden, wobei die Mittel (6) in Form einer Tafel, eines Brettes, einer Platte oder einer Scheibe oder einer Kombination davon vorgesehen sind, wobei die Mittel (6) oder die Beabstandungselemente (9,10) mit Hilfsmitteln (13,15,16,17,18) für die Entfernung der Mittel (6) von den Beabstandungselementen (10,10') versehen sind, und wobei diese Hilfsmittel von der Aussenseite der Palette (1) zugänglich sind, auch wenn die Palette mit einer Last beladen ist und wobei vorzugsweise solche Mittel (6) auf beiden Seiten der Doppelpalette (1) vorgesehen sind.

13. Verfahren nach Anspruch 12, **dadurch gekennzeichnet, dass** die Mittel (6) in Form einer vorzugsweise laminierten hölzernen Platte (6) einer Dicke (c) im Bereich von 5-15 mm, vorzugsweise von 6-12 mm, vorgesehen sind, wobei vorzugsweise die hölzerne Platte (6) eine Breite (a) im Bereich von 80-150 mm, vorzugsweise von 90-120 mm und eine Höhe (b) im Bereich von 80-150 mm, vorzugsweise im Bereich von 100-130 mm aufweist.

14. Verfahren nach einem der Ansprüche 12 oder 13, **dadurch gekennzeichnet, dass** zwischen 4 und 10, vorzugsweise zwischen 5 und 7 Klammern (12), Bolzen oder Nägel zum Fixieren der Mittel (6) an den Beabstandungselementen (10,10') vorgesehen sind.

15. Verfahren nach einem der Ansprüche 12 - 14, **dadurch gekennzeichnet, dass** die Hilfsmittel in Form wenigstens einer Aussparung, eines Loches (13), eines Schlitzes (15,20), einer Platte (16), eines U-Bolzens (17) oder einer Kombination davon gegeben sind.

16. Verfahren nach Anspruch 15, **dadurch gekennzeichnet, dass** Beabstandungselemente (9, 10) verwendet werden, welche an den äusseren Positionen, welche der benachbarte Teil-Palette zugewandt sind, mit Aussparungen oder Nuten nach einem der Ansprüche 8, 9, 10 oder 11 versehen sind, oder dass vor dem Fixieren der Mittel in Form einer

hölzernen Tafel oder Brettes (6) an den Beabstandungselementen (9, 10) Aussparungen oder Nuten nach einem der Ansprüche 8, 9, 10 oder 11 aus den Beabstandungselementen (9, 10) herausgefräst werden, an den äusseren Kanten der Beabstandungselemente oder an der lateralen Seitenfläche, welche der Aussenseite der Palette zugewandt ist.

17. Verfahren nach einem der Ansprüche 12 - 16, zum Herstellen einer Doppelpalette nach einem der Ansprüche 1 bis 11.

Revendications

1. Palette (1) de manutention comprenant une plate-forme (4,5), composée d'un nombre entier de palettes partielles adjacentes (7,8) arrangées côte à côte, chaque palette partielle (7,8) ayant une plate-forme avec des éléments d'espacement (9,10) portant la plate-forme (4,5), en ce que des moyens (6) sont prévus pour relier des éléments d'espacement (10,10') adjacents de palettes partielles (7,8) adjacentes sur leur surface du côté latéral à l'extérieur de la palette (1), et en ce que lesdits moyens (6) sont attachés aux éléments d'espacement (10,10') adjacents de manière détachable, les moyens (6) sont constitués par un paneau, planche, plaque, disque, ou une combinaison de ces derniers, **caractérisée en ce que** les moyens sont attachés aux éléments d'espacement (9,10) par des agrafes (12), des clous, des boulons, ou par une combinaison de ces derniers, **en ce que** les moyens (6) ou les éléments d'espacement (9,10) sont équipés de moyens auxiliaires (13,15,16,17,18) pour enlever les moyens (6) des éléments d'espacement (10,10'), et **en ce que** lesdits moyens auxiliaires sont accessibles à partir de l'extérieur de la palette (1) même si la palette est chargée.

2. Palette (1) selon la revendication 1, **caractérisée en ce qu'**elle est composée de deux demi-palettes (7,8) symétriques, **en ce que** la ligne séparant les deux demi-palettes (7,8) est de préférence perpendiculaire au côté long de la palette (1), et **en ce que** des moyens (6) sont prévus des deux côtés de la palette (1).

3. Palette (1) selon l'une des revendications précédentes, **caractérisée en ce que** les moyens (6) sont réalisés en bois, métal, en matière plastique, ou une combinaison de ces derniers, et de préférence les moyens (6) sont constitués d'un stratifié de bois ou de matière plastique.

4. Palette (1) selon l'une des revendications précédentes, **caractérisée en ce que** les moyens (6) sont constitués en forme d'une plaque de bois, de préférence stratifié, d'une épaisseur entre 5 et 15 mm, et de préférence entre 9 et 12 mm, **en ce que** de préférence la plaque de bois (6) a une largeur (a) entre 80 et 150 mm, de préférence entre 90 et 120 mm, et une hauteur (b) entre 80 et 150 mm, de préférence entre 100 et 130 mm.

5. Palette (1) selon l'une des revendications précédentes, **caractérisée en ce que** les jambes des agrafes (12) ont une longueur entre 15 et 45 mm et sont fabriquées en acier.

6. Palette (1) selon la revendication 1, **caractérisée en ce que** les moyens auxiliaires (13,15,16,17,18) sont constitués en forme d'au moins un évidement, trou (13), fente (15,20), plaque (16), boulon en forme de U (17), ou une combinaison de ces derniers.

7. Palette (1) selon la revendication 6, **caractérisée en ce que** dans le cas d'un trou (13), ce trou a une largeur entre 15 et 50 mm, de préférence entre 30 et 40 mm, et une hauteur entre 10 et 30 mm, de préférence entre 15 et 25 mm.

8. Palette (1) selon la revendication 6, **caractérisée en ce que** les moyens auxiliaires sont prévus en forme d'au moins une fente (20) formée par des évidements localisés sur la surface du côté latéral à l'extérieur de la palette (1) des éléments d'espacement (9,10), sur le bord opposé au côté de l'élément d'espacement tourné vers la palette partielle adjacente, et **en ce que** les moyens (6) ont une largeur (a) qui recouvre l'évidemment formant ladite fente (20).

9. Palette (1) selon la revendication 8, **caractérisée en ce que** la fente (20) a une largeur (e) entre 3 et 10 mm et une profondeur (d) entre 6 et 16 mm, et **en ce que** de préférence la fente (20) s'étend essentiellement le long de la hauteur totale de l'élément d'espacement.

10. Palette (1) selon la revendication 6, **caractérisée en ce que** les moyens auxiliaires sont prévus en forme d'au moins une fente (20) formée par des rainures localisées sur la surface du côté latéral à l'extérieur de la palette (1) des éléments d'espacement (9,10), et **en ce que** les moyens (6) ont une largeur (a) afin de recouvrir sensiblement les rainures formant ladite fente (20).

11. Palette (1) selon la revendication 10, **caractérisée en ce que** la fente a une largeur (e) entre 3 et 10 mm, une hauteur (f) entre 3 et 40 mm et une profondeur s'étendant sur toute la largeur des éléments d'espacement.

12. Procédé pour la fabrication d'une palette jumelée

(1), dont les parties individuelles (7,8) peuvent être détachées les unes des autres en enlevant des moyens (6) assemblant des éléments d'espacement (10,10') adjacents de palettes partielles (7,8) adjacentes sur leur surface du côté latéral à l'extérieur de la palette (1), **caractérisée en ce que** deux palettes partielles sont mises côte à côte, et après des éléments d'espacement adjacents des palettes partielles adjacentes sont réunis ensemble en fixant les moyens (6) sur la surface du côté latéral et à l'extérieur de la palette (1) en utilisant des agrafes (12), des clous, des boulons, **en ce que** les moyens (6) sont prevus en forme de paneau, planche, plaque, disque, ou une combinaison de ces derniers, **en ce que** les moyens (6) ou les éléments d'espacement (9,10) sont équipés de moyens auxiliaires (13,15,16,17,18) pour enlever les moyens (6) des éléments d'espacement (10,10'), et **en ce que** lesdits moyens auxiliaires sont accessibles à partir de l'extérieur de la palette (1) même si la palette est chargée et **en ce que** de préférence lesdits moyens sont prévus de part et d'autre de la palette (1).

13. Procédé selon la revendication 12, **caractérisé en ce que** les moyens (6) sont prévus en forme d'une plaque de bois, de préférence stratifiée, d'une épaisseur entre 5 et 15 mm, de préférence entre 6 et 12 mm, **en ce que** de préférence la plaque de bois (6) a une largeur (a) entre 80 et 150 mm, de préférence entre 90 et 120 mm, et une hauteur (b) entre 80 et 150 mm, de préférence entre 100 et 130 mm.

14. Procédé selon l'une des revendications 12 ou 13, **caractérisé en ce que** entre quatre et dix, de préférence entre cinq et sept agrafes (12), boulons ou clous sont prévus pour attacher les moyens (6) aux éléments d'espacement (10,10').

15. Procédé selon l'une des revendications 12 - 14, **caractérisé en ce que** les moyens auxiliaires sont constitués en forme d'au moins un évidement, trou (13), fente (15,20), plaque (16), boulon en forme de U (17), ou une combinaison de ces derniers.

16. Procédé selon la revendication 15, **caractérisé en ce que** l'on utilise des éléments d'espacement qui ont, aux positions extérieures en face de la palette adjacente, des évidements ou rainures selon respectivement l'une des revendications 8 ou 9 ou 10 ou 11, ou que, avant d'attacher les moyens en forme d'une plaque de bois ou planche (6) aux éléments d'espacement (9,10), des évidements ou rainures selon l'une des revendications 8 ou 9 ou 10 ou 11 sont fraisés respectivement dans les éléments d'espacement (9, 10) sur un bord extérieur des éléments d'espacement, ou sur la surface du côté latéral à l'extérieur de la palette (1) des éléments d'espacement.

17. Procédé selon l'une des revendications 12-16, pour produire une palette jumelée selon l'une des revendications 1-11.

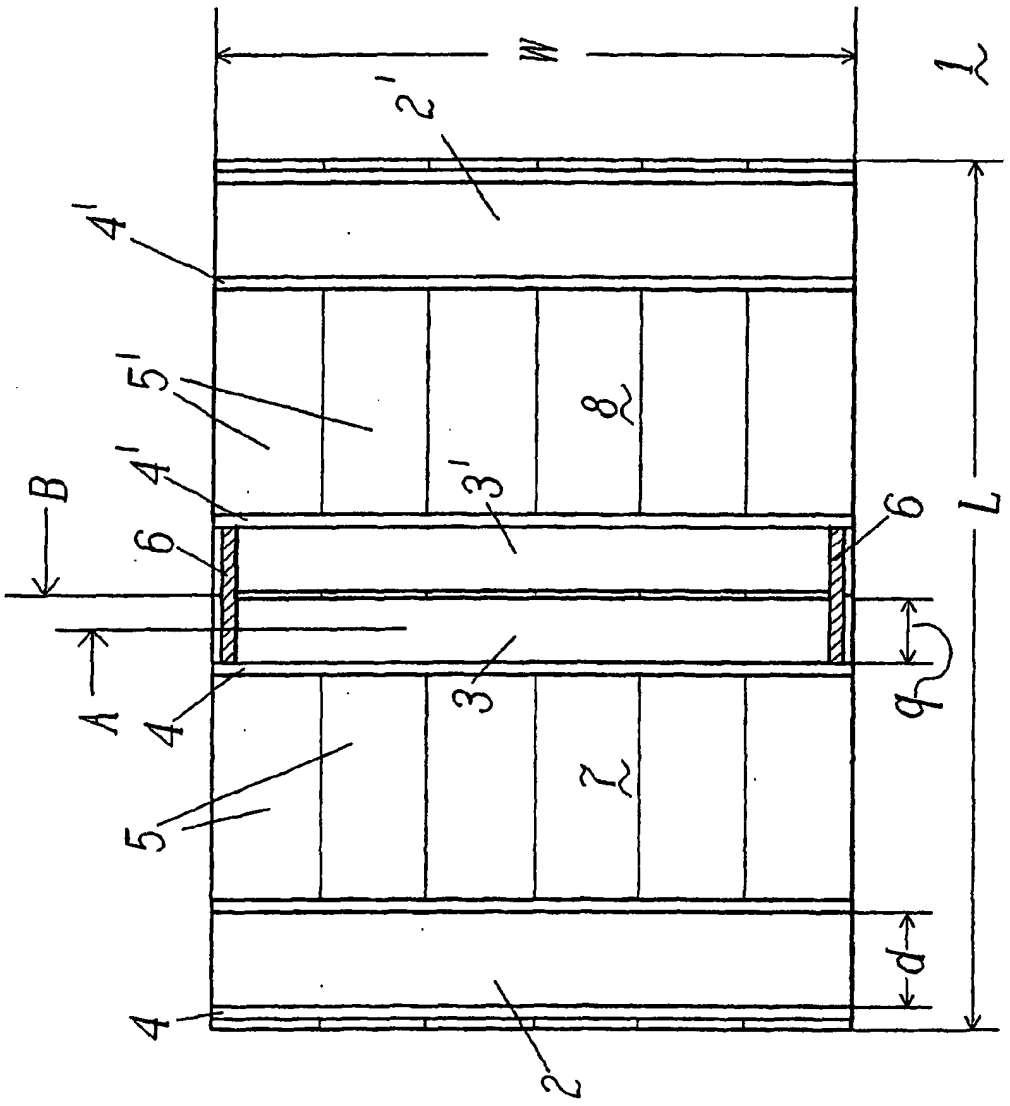


Fig. 1

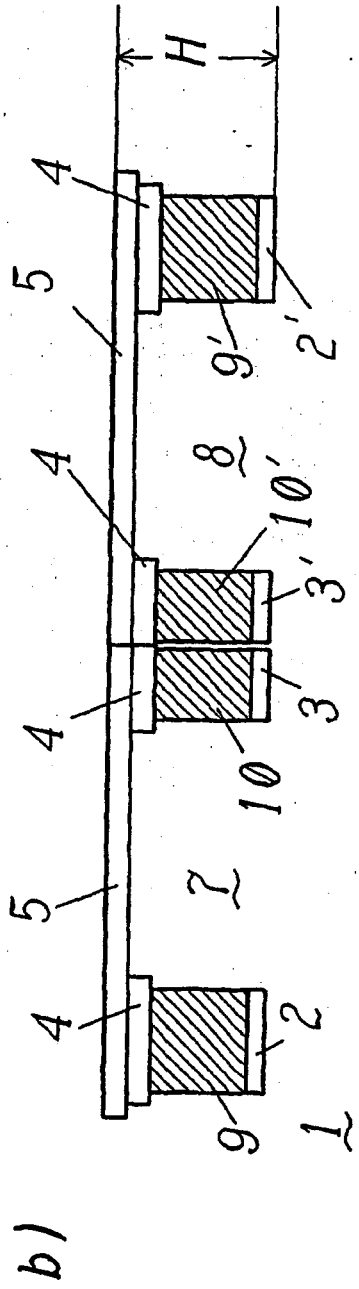


FIG. 1

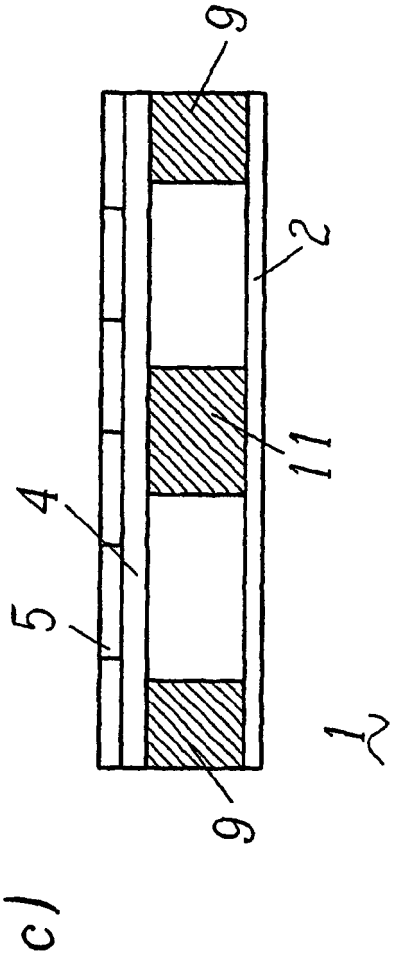
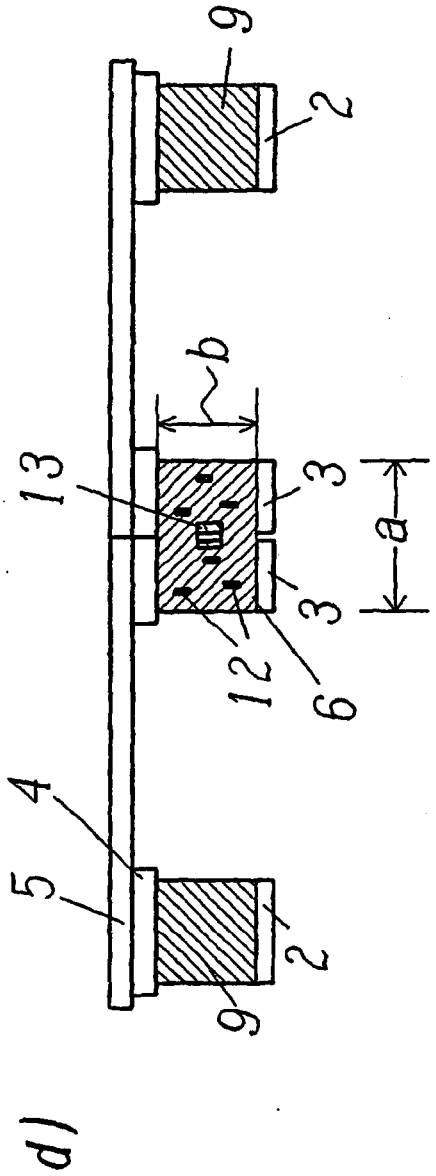


Fig. 1



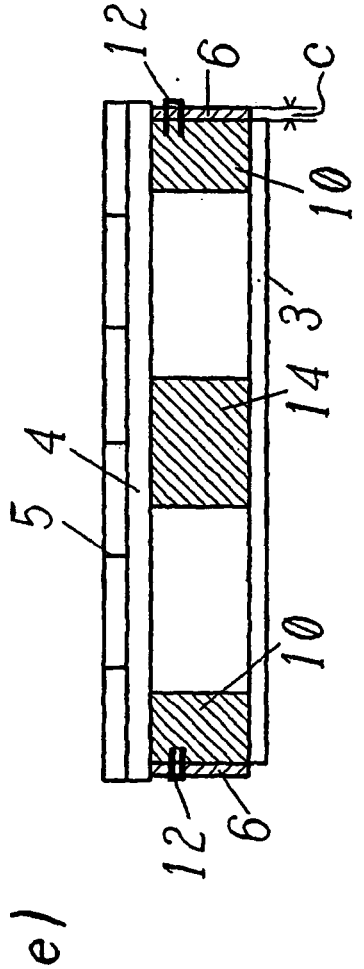


Fig. 1

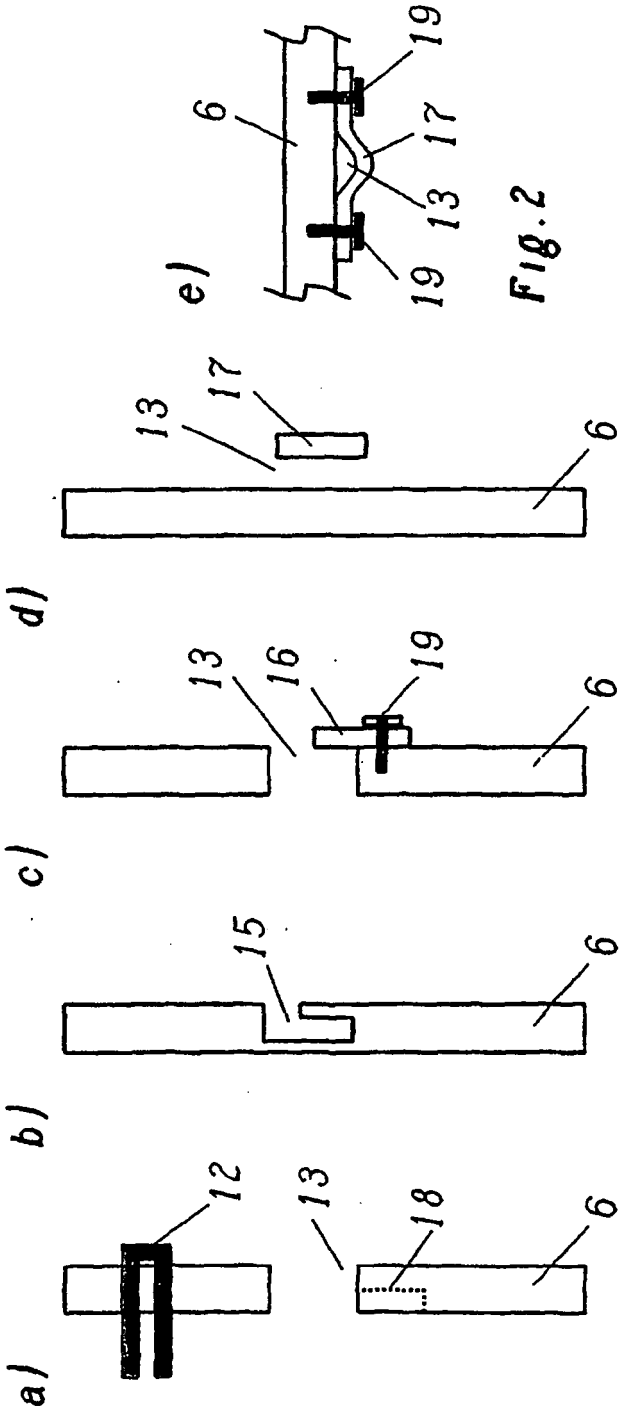


Fig.2

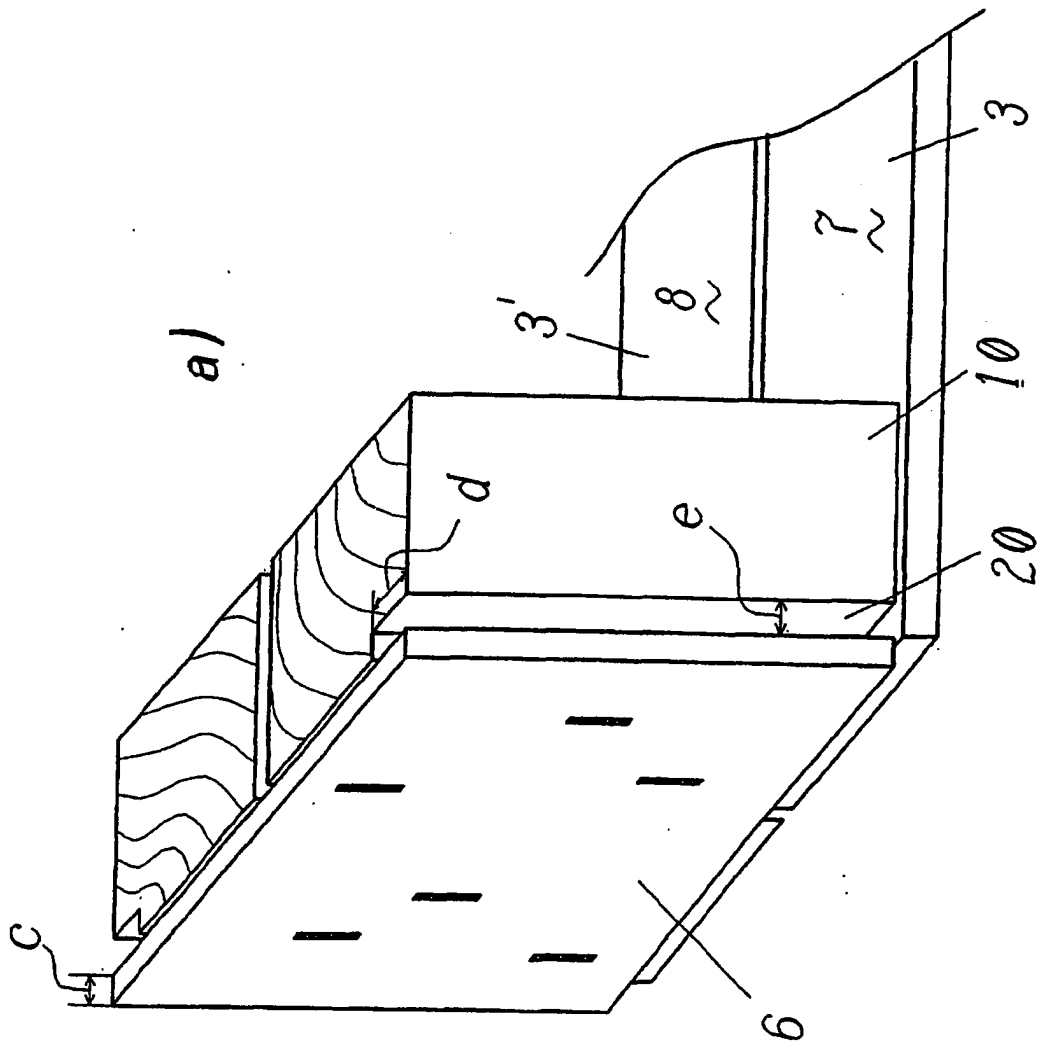


FIG. 3

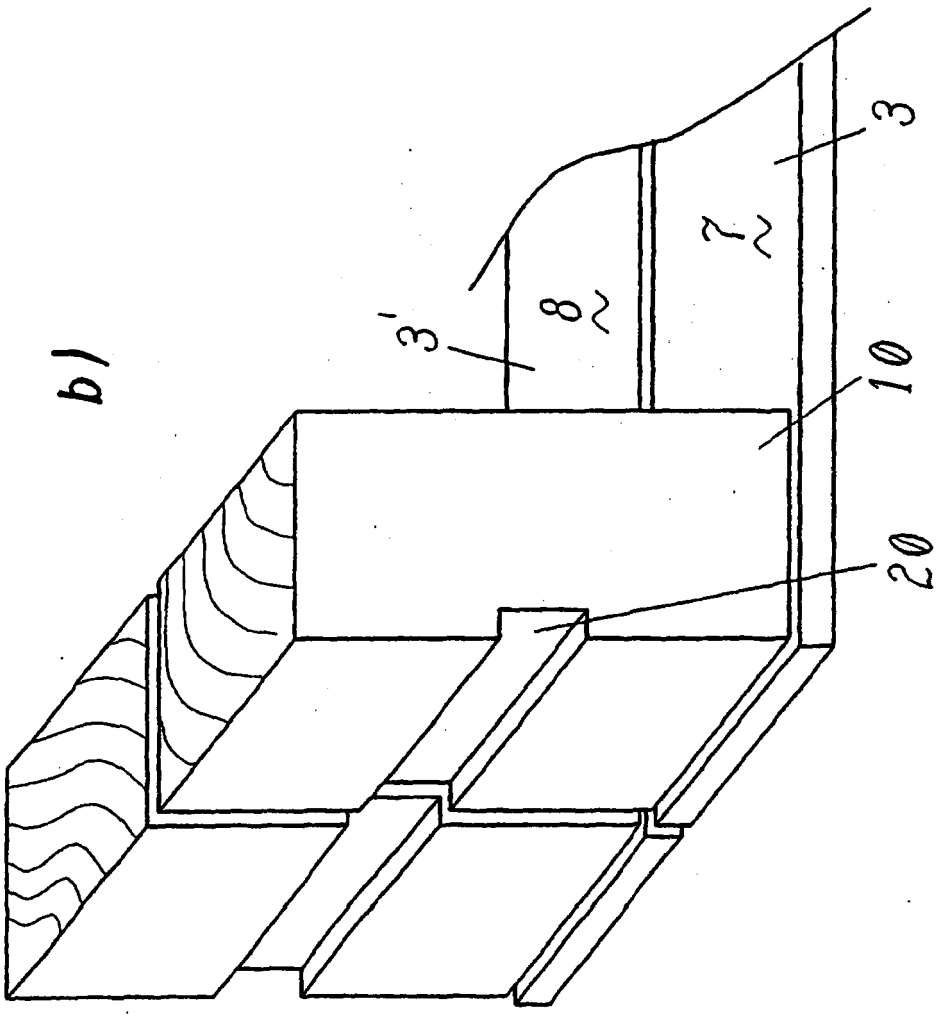


FIG. 3

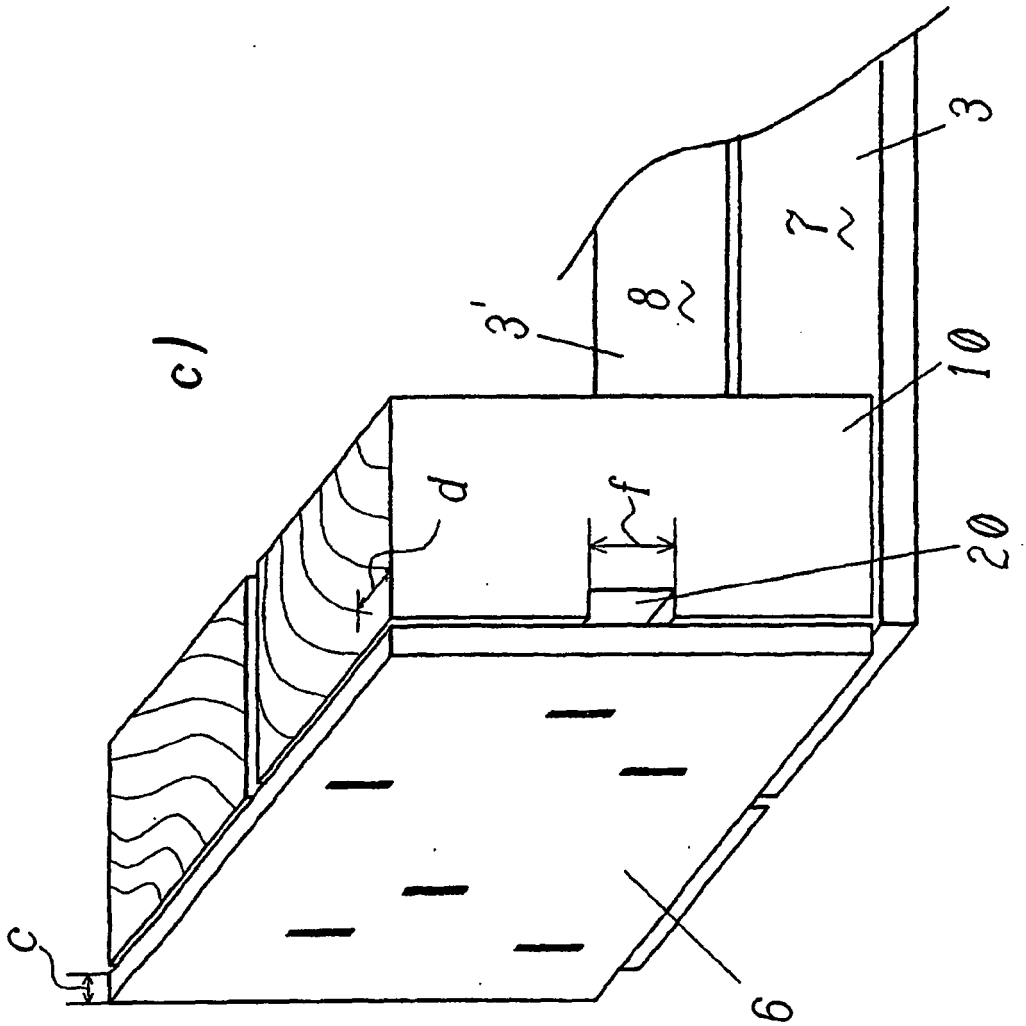


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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