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(54) **Plastic pallet formed of two half pallets with visible tabs and assembling method for such pallet**

(57) The present invention concerns a pallet (1) formed of two plastic material half pallets (2, 3), each having a rigid rectangular main panel (6, 7) having an inner side (8, 9) and an outer side 10, 11), to be assembled to each other in face to face relationship of their inner sides via connecting parallelepipedic means (12, 13) defining apertures (41) between each other for fork handling. Each connecting means comprises on its external faces a rectangular or trapezoidal hollow slot (27)

presenting lateral grooves (28), and a rectangular or trapezoidal tab (30) in plastic material and in a contrasting colour with the half pallets, presenting a complementary form to said hollow slot, inserted and inamovably blocked within said grooves and said hollow slot, said slot and inserted plate being substantially centred with regards to said apertures, said plates presenting an external surface (31) parallel or in recess from the external surface (31') of said connecting means.

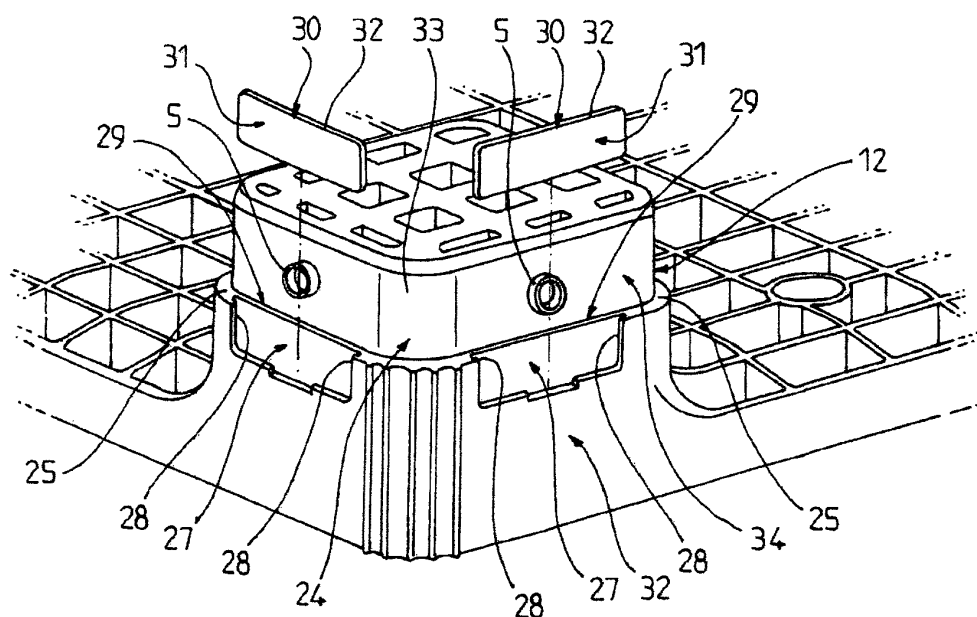


FIG. 2

Description

[0001] The present invention concerns a pallet formed of two plastic material half pallets, to be assembled to each other in a face to face relationship by connecting means.

[0002] It is also related to a method for assembling such pallet.

[0003] The invention is more particularly but not exclusively related to the domain of beverage transport and for instance the transport of bottle crates, packs of cans etc for breweries.

[0004] Pallets formed from an upper and a lower decks preferably of identical construction so that both elements can be formed in a single mold, are known.

[0005] With such pallet, which involves two separate parts smaller than a complete pallet, it is possible to use smaller injection machines.

[0006] Also, and in order to be sufficiently solid, such pallets need reliable connecting parts between the two halves strong enough to avoid disconnection.

[0007] Another problem encountered with such plastic pallet is their destruction by the forks of the lift trucks.

[0008] Most of the pallets are black or of a dark color. Especially when at night, the forklift driver very often does not find immediately the holes of the pallet with the forks. In fact approximately 1/3 of the pallets are destroyed by the handling and repetitive hurts of such misled forks.

[0009] It is a main object of the present invention to provide an improved pallet formed of two halves and a method to assemble such pallet in a way that the risk of such destruction on the four sides of the pallet is greatly limited and/or eliminated.

[0010] This authorizes a possibility to avoid hurting the pallet for the fork lift driver, while also providing the possibility to avoid changing the whole pallet, for example in case only half of the pallet is damaged.

[0011] Therefore the entire pallet does not become obsolete.

[0012] Furthermore, with the invention, it will be possible to provide a pallet formed of two half pallets injected in two different colors.

[0013] The two colors create a very clean separation of both halves, which renders the middle of the pallet openings even more visible for the fork lift driver.

[0014] This leads again to less damages caused by the forks of the fork lift.

[0015] The present invention therefore authorizes a greater longevity for the pallets at a lower cost.

[0016] It will also be possible, for example, to use half pallet members in 100% recycled material, without jeopardizing the strength and/or load supporting ability of the pallet, for instance one half member being in recycled material and the other connected to the recycled one being made from a virgin plastic material and/or in a stronger material by adding, for example, glass fibers.

[0017] For these purposes, the invention mainly proposes a pallet formed of two plastic material half pallets,

each having a rigid rectangular main panel having an inner face or side, to be assembled to each other in face to face relationship of their inner sides via connecting parallelepipedic means defining apertures between each other for fork handling, characterized in that each connecting means comprises on its external faces a rectangular or trapezoidal hollow slot presenting lateral grooves, and a rectangular or trapezoidal tab in plastic material and in contrasting colour with the half pallets presenting a complementary form to said hollow slot, inserted and inamovably blocked within said grooves and said hollow slot, said hollow slot and inserted plate being substantially centred with regards to said apertures, said plates presenting an external surface parallel or in recess from the external surface of said connecting means.

[0018] Advantageously the tab is a small plate of little thickness (3 mm for instance) and several millimetres of width and length i.e. between 1 and 4 cm by 4 cm to 8 cm, for instance 2 cm x 6 cm.

[0019] The tabs being of a different contrasting colour than the colour of the pallet members connecting means on which they are inserted are easily identified.

[0020] They may also be in different plastic material than the pallet, but could also be of the same material which renders the plastic of the whole pallet more recyclable.

[0021] Also different colours for the tabs may be used in function of the client and/or the domain of use of the pallets for the same client.

[0022] Advantageously the plate could be marked or injected with the logo and/or the name of the client.

[0023] In another advantageous embodiment the different colours of the plate or tab is a bright colour, for instance pink or yellow, for instance fluorescent, the half pallet being of a darker colour.

[0024] Advantageously, the connecting means are formed by a plurality of support legs and a plurality of corresponding hollow posts connected together via interlocking snap-fit latches, said support legs and said hollow posts being integral with and projecting from the inner side respectively of one or the other of said main panels, the distal end parts of support legs being in abutment with said corresponding hollow posts by corresponding intermediate rims when connected, each support leg comprising said hollow slots on its external faces, the top periphery of said slots being in alignment with the intermediate rim of said corresponding support legs, and the top periphery of said tabs plates being in abutment with the corresponding hollow posts, blocking in position said tab when the snap-fit latches are triggered.

[0025] In another advantageous embodiment, the connecting means comprise a male and a female members, and the plates are inserted on both and at the interface between said members.

[0026] Advantageously one of the peripheral edges of the tab is chamfered to facilitate its introduction in the slot.

[0027] In a specific embodiment, the protruding parts are integral and disposed on the support legs, the exter-

nal face, or part of said external face, of said protruding parts having for instance an angle with the surface of said support legs for facilitating insertion of the plate, and the holes are on corresponding hollow posts.

[0028] In another advantageous embodiment the protruding parts are integral and disposed on the inside face of the hollow posts and the holes on corresponding support legs (in vis a vis).

[0029] Advantageously the protruding parts are of polygonal shape.

[0030] The polygonal shape is for instance, square or rectangular or trapezoidal isocèle, and the protruding part is inserted by force, the blocking being obtained by a simple clic.

[0031] In another advantageous embodiment the protruding parts and the corresponding holes are cylindrical.

[0032] In another advantageous embodiment the two half pallets are of different colours.

[0033] Also advantageously the two half pallet members are easily separable with an adapted tool and the tabs or plates are then removable.

[0034] The adapted tool may be a thin blade slid between the protruding part and the interior face of the hole to separate progressively them from each other.

[0035] Advantageously the surface of each of the main panels is a grating with or without hollowed parts between the connecting means.

[0036] The invention further proposes a method for assembling a pallet as described above.

[0037] It also proposes a method of assembling two half pallets for forming a pallet, each of said half pallets comprising a rigid rectangular main panel having an inner face and an outer face, a plurality of support legs and a plurality of corresponding hollow posts, said support legs and said hollow posts being integral with and projecting from the inner side respectively of one or the other of said main panels, the distal ends of the support legs of one half pallet being arranged to be engaged with the corresponding hollow posts of the other half pallet by snap-fit latches, and in abutment with each other by corresponding intermediate rims, characterised in that the support legs comprising on their external faces an hollow slot presenting lateral grooves, a plate is inserted within said grooves of said slot for presenting an external surface parallel or in recess from the external surface of said support leg,

and in that said half pallets are assembled by engaging the distal end parts of the support legs of one half pallet with the corresponding hollow posts of the other half pallet via said snap-fit latches, therefore blocking in position said plates when the snap-fit latches are triggered.

[0038] Advantageously, the top periphery of said slot being in alignment with the intermediate rim of said support leg and the plate being inserted for having its top periphery in alignment with the intermediate rim of said support leg, said intermediate rims of the corresponding legs is driven in abutment with the corresponding hollow posts for blocking in position said plates.

[0039] The present invention will be better understood from reading the following description of particular embodiments given by way of non limiting examples, with reference to the accompanying drawings, wherein:

Figure 1 is a schematic axonometric view of two half pallets in upside down positions, namely a lower deck above an upper deck to be assembled to each other in face to face relationship, corresponding to a first embodiment of the invention.

Figure 2 is an enlarged view of a part of figure 1 showing a support leg, and its corresponding tags before assembling.

Figure 3 shows the pallet in perspective formed by the upper deck and the lower deck of figure 1, this time in normal position, with their plates after assembling.

Figure 4 is an enlarged view of a support leg and tabs according to another embodiment of the invention.

Figure 5A to 5D are partial enlarged views in perspective showing the first steps of the method of assembling according to an embodiment of the invention.

[0040] Figure 1 shows (upside down) a pallet 1 formed of two plastic half pallets, namely a lower deck 2, and an upper deck 3 to be assembled to each other in face to face relationship by interlocking snap-fit latches 5, 5' each of said half pallets members comprising a rigid rectangular main panel 6, 7 having an inner side 8, 9 and an outer side 10, 11.

[0041] The main panel of the lower deck 2 is for instance a grid with four square apertures delimitating three perpendicular sets of three beams comprising the connecting parts with the other half pallet, situated for instance at each corners and in the middle of each beam.

[0042] The main panel of the upper deck 3 is a complete grid constituted in a manner known per se, with its connecting part in vis a vis of the connecting parts of the lower deck 2 to form the connecting means.

[0043] In the embodiment more particularly described here, the half pallet 3 comprises a plurality of support legs 12 and the half pallet 2 comprises a plurality of corresponding hollow posts 13, said support legs and hollow posts being integral with and projecting from the inner side 8, 9 of the respective main panel 6, 7.

[0044] More particularly each half pallet comprises a first lateral row 14, 15 of respectively three hollow posts 13 disposed on a first lateral side and three corresponding support legs 12 disposed on said first lateral side, two at each extremity and one in the middle, a second lateral row 16, 17 identical to the first one and a third central row 18, 19 having three hollow posts 13 on member 2 to be connected with three support legs 12 on member 3, centred with regard to the central axis 20 of the pallet.

[0045] The snap-fit latches 5, 5' are formed by protruding parts 5 arranged to snap in corresponding holes 5,

the protruding parts 5 being cylindrical (on the example of figure 1) and disposed on the support legs 12 which are for instance parallelepipedic, and more particularly on the external side(s) of said support legs with regard to the interior of the pallet.

[0046] These protruding parts are situated in the upper part or distal end 21 of the support legs and are arranged to cooperate with the inner part 22 of a corresponding hollow post (of a complementary parallelepipedic form).

[0047] In this embodiment, the holes 5' are disposed on the external face 23 of the hollow posts 13, with regard to the interior of the pallet, and arranged to snap with said corresponding protruding parts 5.

[0048] According to the embodiment of the invention more particularly described here (see also figure 2), the distal ends 24 of the support legs comprises intermediate rims 25 to be in abutment with the periphery 26 (see figure 1) of a corresponding hollow post 13.

[0049] Each support leg 12 comprises on its external face(s) with regard to the interior of the pallet, a rectangular hollow slot 27 presenting vertical lateral grooves 28.

[0050] The interior faces are of course not equipped with such hollow slot (and plates).

[0051] The top periphery 29 of the slot is in alignment with the intermediate rim 25.

[0052] The pallet 1 comprises twelve rectangular bright yellow (and/or fluorescent) plates or tabs 30 of complementary form of the hollow slot 27 inserted within the grooves 28 of each slot and presenting an external surface 31 in recess of the external surface 31' of the support leg 12, the top periphery 32 of the tab 30 being in alignment with the rim 25 and the top periphery 29 of the slot (when entirely inserted in the slot), said top periphery 32 being in abutment with the periphery of the hollow post when the snap-fit latches are triggered, blocking said tab in position.

[0053] The snap-fit latch 5, 5' between the lower deck 2 and the upper deck 3 are now further detailed.

[0054] The support leg 12 have a distal end 24 which comprises an upper part 33 which is parallelepipedic, for instance with a section which is squared and comprises interior rigidification panels in order to provide a strong and good supporting leg, said upper part 33 having an external surface 34 arranged to slide along and within the opening of the corresponding hollow post 13, said opening being therefore slidably connected with said upper part of the support leg 12.

[0055] The opening comprises on its two external corner panels 35 (see figure 1 for the hollow post situated at the corner of the half pallet), respectively on each panel, one circular hole 5'.

[0056] On the corresponding surface 34 of the support legs 12, and more particularly on its upper part, are disposed protruding parts 5 which are cylindrical pills and arranged to match with the holes 5' when the support leg is introduced in the opening of the hollow post, and pushed until when the edge or rim 25 of the upper part 24 enters in contact with the periphery 26 of the opening

of the hollow post 13.

[0057] Meanwhile the protruding parts 5 will slide along until they snap with the corresponding holes 5'.

[0058] Figure 3 shows the pallet after complete assembling.

[0059] The plates 30 are centred or substantially centred with regard to the apertures. As the plate is for instance roughly at 20 mm of high and the aperture between 86 mm to 105 mm, the fork, which is of 20 mm of thickness does not risk to hurt the main panel and damage it.

[0060] Hereafter, the same reference numerals will be used for designating the same or similar elements.

[0061] Figure 4 shows an enlarged view of another embodiment of the support leg 36 with a tab 30 inserted in the hollow slot 27 in a way similar to what is described in reference to figure 2.

[0062] Here the snap fit latches is however different and comprises a parallelepipedic hollow recess 37 connex to the intermediate rim 25 and having for instance a similar thickness than the thickness of such rim, to be connected with a corresponding protruding part of same dimensions provided on the internal face of the hollow post (not shown).

[0063] Figure 5A to figure 5D shows the first steps of an embodiment of the method of the invention for assembling a pallet, illustrating more particularly the introduction of the tag.

[0064] The tag 30 is approached manually by an operator (not shown) to the support leg 12 (figure 5A).

[0065] It is then pushed into place by sliding movement of the peripheral side 40 of the tag in the grooves 28 (figure 5B) of the hollow slot 27.

[0066] Here, the protruding part 5 being on the distal end part of the support leg, the plate 30 is for instance, slightly flexible in order to be introduced more easily.

[0067] But when the hollow slots are on the support legs, the tabs are introduced directly without need for flexibility.

[0068] Then the tab is definitely pushed into place the top peripheric edge 32 arising and being in alignment with the intermediate rim 25 formed by a small and narrow horizontal edge of a thickness of for instance 3 mm to 5 mm (figure 5C).

[0069] The hollow post 13 is then introduced slidably on the distal end of the support leg 12, therefore blocking the tab 30 into place which will then clearly signal one of the side and the level of the hole 41 of the pallet, to be used with a fork for supporting and moving the pallet.

[0070] The present invention is not limited to the more particularly described embodiment but concerns all other equivalent embodiments and for instance embodiments having different snap-fit latches, having support legs and hollow posts which are on two or three rows with bended plates or tabs, and/or holes and corresponding protruding parts which are not cylindrical, but, as indicated above, rectangular or triangular.

Claims

1. A pallet (1) formed of two plastic material half pallets (2, 3), each having a rigid rectangular main panel (6, 7) having an inner side (8, 9) and an outer side 10, 11), to be assembled to each other in face to face relationship of their inner sides via connecting parallelepipedic means (12, 13) defining apertures (41) between each other for fork handling, **characterized in that** each connecting means comprises on its external faces a rectangular or trapezoidal hollow slot (27) presenting lateral grooves (28), and a rectangular or trapezoidal tab (30) in plastic material and in a contrasting colour with the half pallets, presenting a complementary form to said hollow slot, inserted and inamovably blocked within said grooves and said hollow slot, said slot and inserted plate being substantially centred with regards to said apertures, said plates presenting an external surface (31) parallel or in recess from the external surface (31') of said connecting means.

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2. The pallet (1) according to claim 1, **characterized in that** the different colour of the tab is pink or yellow, and/or fluorescent, the half pallets being of darker colours.

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3. A pallet according to any of the preceding claims, **characterized in that** the connecting means are formed by a plurality of support legs (12) and a plurality of corresponding hollow posts (13) connected together via interlocking snap-fit latches (5, 5' ; 37), said support legs and said hollow posts being integral with and projecting from the inner side respectively of one or the other of said main panels, the distal end parts (21) of the support legs being in abutment with said corresponding hollow posts by corresponding intermediate rims (25) when connected, each support leg comprising said hollow slots (27) on its external faces, the top periphery (29) of said slot being in alignment with the intermediate rim (25) of said support leg and the top periphery (32) of said tab (30) being in abutment with the hollow post (13) blocking in position said tab when the snap-fit latches are triggered.

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4. The pallet according to any of the preceding claims, **characterized in that** one of the peripheral edges of the tab is chamfered to facilitate its introduction in the slot (27).

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5. The pallet according to any of the preceding claims, **characterized in that** the protruding parts (5) are integral and disposed on the support legs (12) and the holes are on the corresponding hollow posts.

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6. The pallet according to claim 5, **characterized in that** the external face or part of said external face of said protruding parts has an angle with the surface of said support legs for facilitating insertion of the tab (30), and the holes are on corresponding hollow posts.

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7. The pallet according to any of claims 1 to 4, **characterized in that** the protruding parts are integral and disposed on the inside face of the hollow posts and the holes on corresponding support legs.

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8. The pallet according to any of the precedent claims, **characterized in that** the protruding parts are of polygonal shapes.

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9. The pallet according to any of the precedent claims 1 to 7, **characterized in that** the protruding parts (5) and the corresponding holes (5') are cylindrical.

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10. The pallet according to any of the preceding claims, **characterized in that** the two half pallets (2, 3) are of different colours.

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11. The pallet according to any of the preceding claims, **characterized in that** the two half pallets are easily separable with an adapted tool and **in that** the tabs are removable.

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12. The pallet according to any of the preceding claims, **characterized in that** surfaces of each of the main panels is a grating.

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13. A method of assembling two half pallets for forming a pallet (1), each of said half pallets comprising a rigid rectangular main panel (6, 7) having an inner face and an outer face, a plurality of support legs (12) and a plurality of corresponding hollow posts (13), said support legs and said hollow posts being integral with and projecting from the inner side respectively of one or the other of said main panels, the distal ends parts (21) of the support legs of one half pallet being arranged to be engaged with the corresponding hollow posts of the other half pallet by snap-fit latches (5, 5'), and in abutment with each other by corresponding intermediate rims (25), **characterised in that** the support legs (12) comprising on their external faces an hollow slot (27) presenting lateral grooves (28), the top periphery (29) of said slot being in alignment with the intermediate rim (25) of said support leg, a tab (30) is inserted within said grooves (28) of said slot for presenting an external surface parallel or in recess from the external surface of said support leg and for having its top periphery (32) in alignment with the intermediate rim of said support leg, and **in that** said half pallets (2, 3) are assembled by engaging the distal ends parts (21) of the support legs of one half pallet with the corresponding hollow posts of the other half pallet via said snap-fit latches.

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(5, 5'; 37), said intermediate rims (25) of the corresponding legs being driven in abutment with the corresponding hollow posts (13), therefore blocking in position said tabs (30) when the snap-fit latches are triggered.

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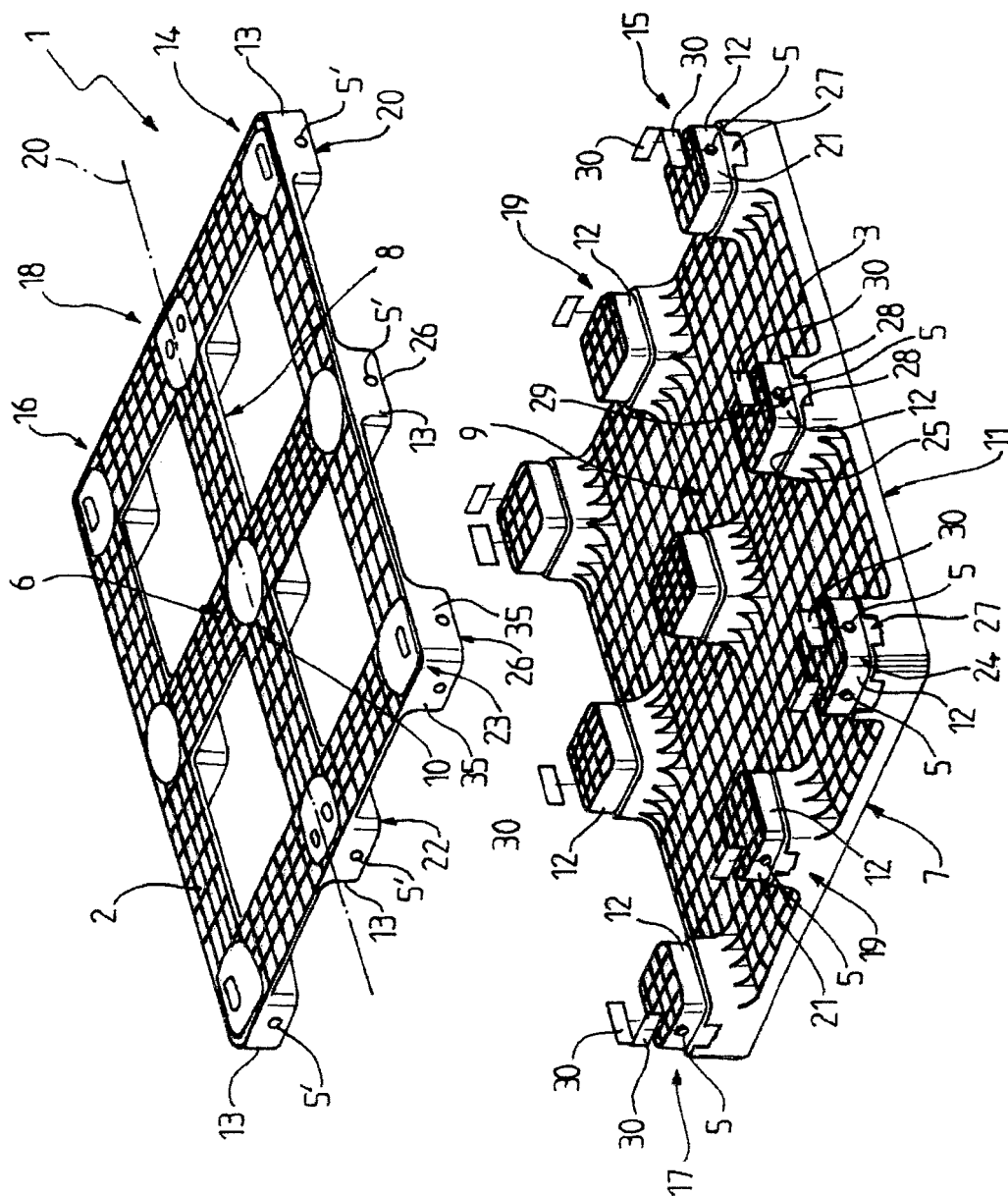


FIG.1

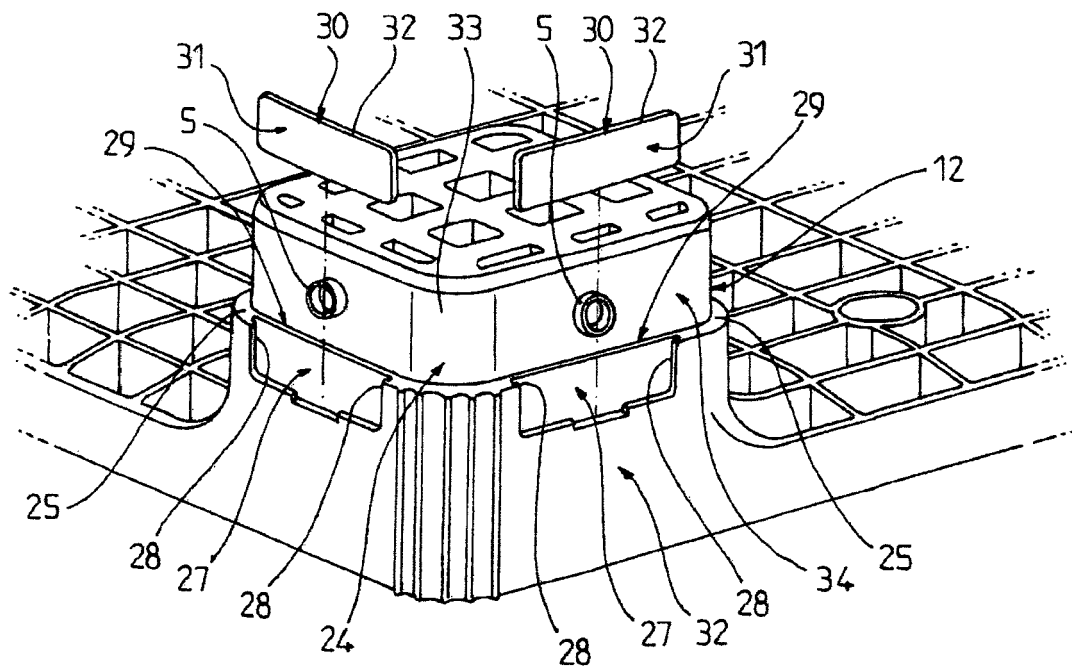


FIG. 2

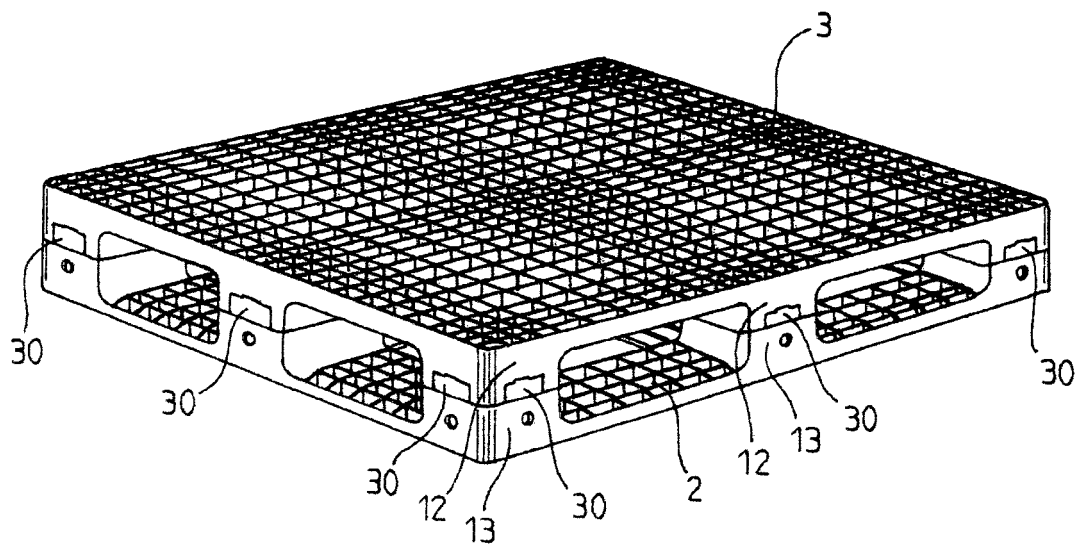
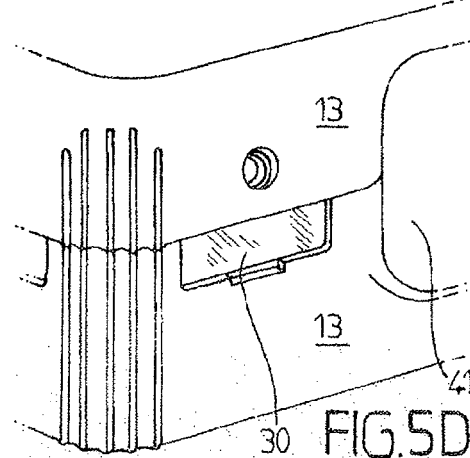
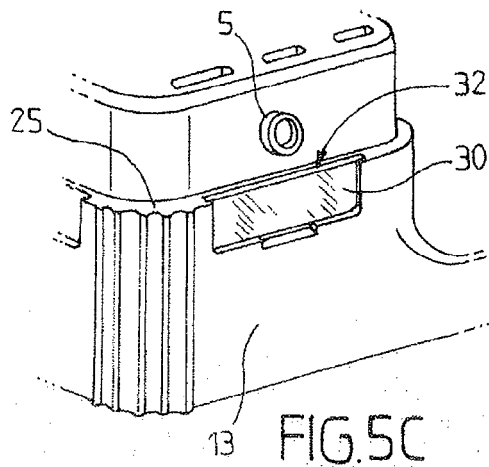
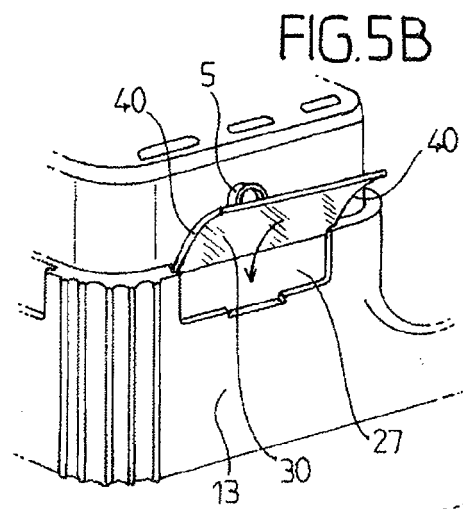
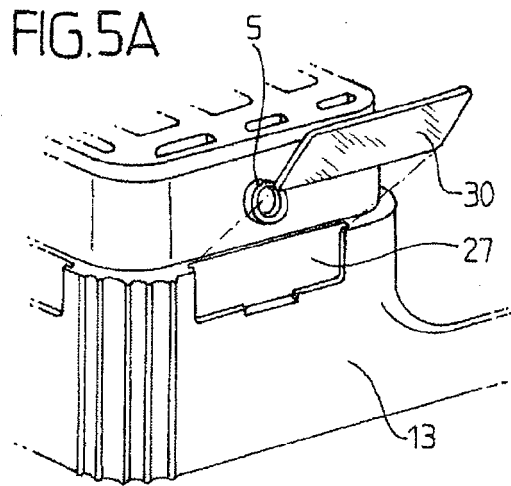
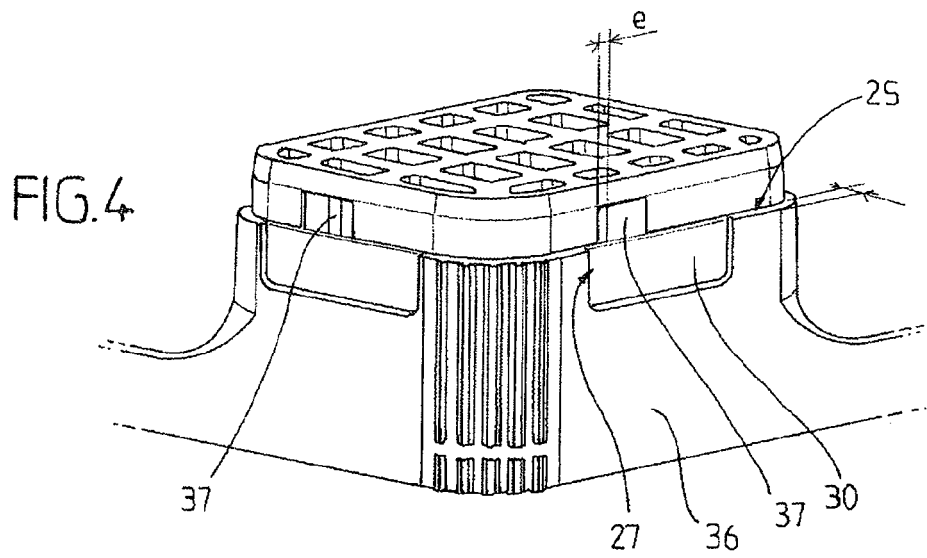


FIG. 3





EUROPEAN SEARCH REPORT

Application Number
EP 14 00 2677

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 January 2015	Examiner Wimmer, Martin
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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