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(54) Collapsible pallet box

(57) The box is characterised in that the lid (2) comprises a plurality of aligned cavities (6,7,8,9) in the vicinity of the large sides and containing, in their interior, retaining catches (42) for the laminar element (3) for lateral closure of the box and in that the lateral edges of the lid have lower projecting flanges (21,22) with retaining profiles and capable of engaging in opposing apertures (25,26) of the platform (1) while being retained by said retaining profiles, said platform (1) and lid (2) comprising respective engaging structures for forming a folded assembly in which the aforementioned flanges (21,22) of the lid (2) are introduced in corresponding apertures (25,26) of the platform (1).

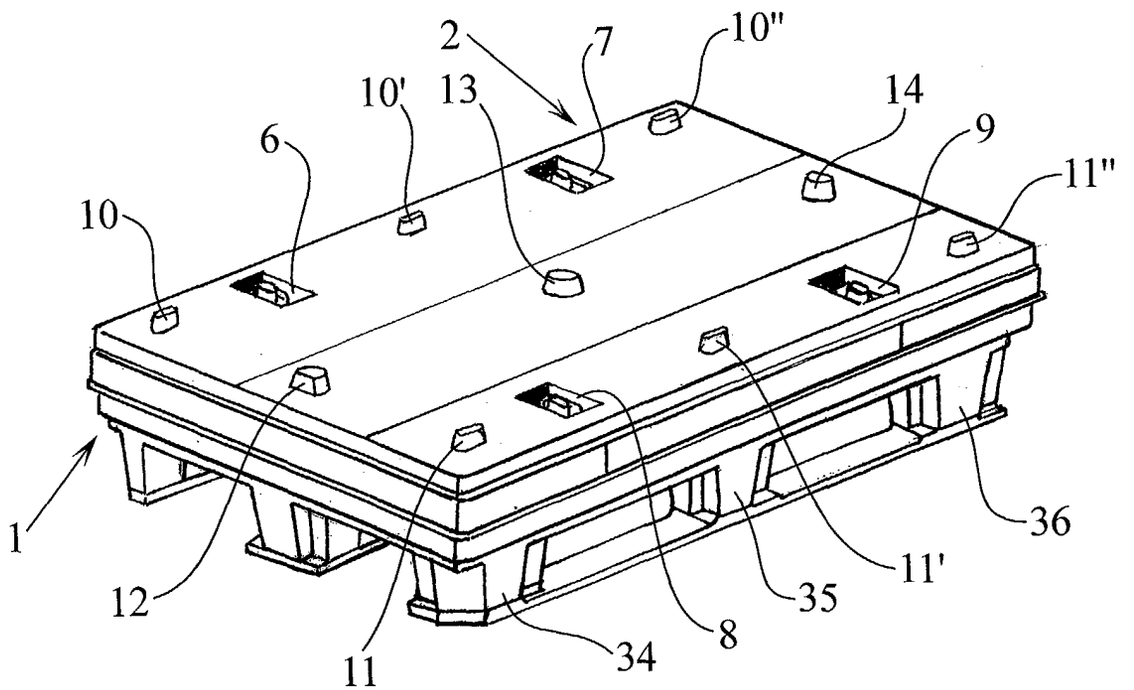

FIG. 2

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Description

[0001] The present invention relates to a palletised box having substantial characteristics of novelty and inventive step over the prior art.

[0002] The palletised box forming the subject of the present invention is intended to contain various articles with a base platform and an upper closing lid which are preferably connected by an intermediate folding laminar element, or a carton which is commonly known by the English name of "box" and is widely used for the transport of all types of parts and articles in various industries, for example the automotive industry, etc.

[0003] The palletised box forming the subject of the present invention is specifically designed to have its platform and lid produced by injection moulding and to be able to assume a very compact folded structure in that the platform receives the intermediate laminar element or carton of folded shape, the lid being situated thereon and being retained against the platform by a plurality of tongues which have an anti-withdrawal retaining profile and are inserted in apertures of the platform, making the assembly very compact and stable for the storage and transport thereof.

[0004] Furthermore, the palletised box forming the subject of the present invention has means to allow the displacement thereof on roller tracks which assume the form of detachable sliders coupled to the protuberances projecting from the lower part of the platform in such a way that the palletised box can adopt a shape suitable for the translation thereof on roller tracks as it has the aforementioned detachable sliders. Alternatively, the box may be arranged for the positioning thereof in a stack on other platforms when the detachable sliders have been separated from the platform. Similarly, the palletised box forming the subject of the present invention has devices for locking the folding laminar part or carton which are easier to use and prevent the loss of the component parts of the elements making up the closure means.

[0005] Optionally, the palletised box forming the subject of the present invention comprises apertures which are conveniently disposed in both the platform and the lid to allow said elements to be joined together by a strap which is especially useful when the palletised box is to be used without an intermediate laminar closure element between the platform and the box, for example for the palletised transport of a plurality of small-sized boxes which, after being stacked on the platform, make up a parallelepiped structure of which the base coincides with the rectangular shape of box and lid.

[0006] To assist understanding and as a non-limiting example, a preferred embodiment of the present invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side view of the components of the palletised box in the folded position.

Fig. 2 is a perspective view of the palletised box in the folded position.

Figs. 3 and 4 correspond respectively to a plan view from above of the lid of the palletised box and a lateral elevation thereof from one of its larger sides.

Figs. 5 and 6 are a view from the lower face of the lid of the palletised box forming the subject of the present invention and a lateral elevation from one of the smaller sides respectively.

Figs. 7 and 8 are a plan view and an elevation respectively in the position of inversion of the platform of the box.

Figs. 9 and 10 are respective views from below and in a lateral elevation through one of the smaller sides of the platform of the box.

Figs. 11 and 12 are respective elevations from one end and in a plan view of the assembly of sliders incorporated in the box forming the subject of the present invention.

Fig. 13 is a perspective view of said assembly of sliders.

Fig. 14 is a section through the parts making up a retaining closure for the lateral laminar element of the palletised box of the present invention.

Figs. 15 and 16 are respective sections of the closure shown in Fig. 14 in the respective inactive and active or locking positions of said closure.

Fig. 17 is a perspective view, with the elements disassembled and partially in section, of the closure shown in Figs. 14 to 16.

Figs. 18 and 19 are respective views showing two palletised boxes according to the present invention in the stacked position.

[0007] As shown in the figures, the palletised box of the present invention is substantially composed of a lower platform or base part 1, an upper lid 2 and a foldable laminar part or carton 3 of which the position, when assembled, is shown in Figs. 18 and 19 which illustrate two stacked boxes designated by reference numerals 4 and 5 and having the base or platform 4' and the lid 4" as well as the intermediate laminar part 4"' and, with respect to the box 5, the base 5' with its lid 5" and the lateral laminar part 5"' respectively.

[0008] The constitution of the palletised box forming the subject of the present invention is suitable for production of the platform 1 and lid 2 by injection moulding of thermoplastic material, since the existing sections and reinforcements of various zones which will be evaluated hereinafter are intended to impart high rigidity and mechanical strength to the parts making up the box, as well as a light weight thereto.

[0009] In its upper face, the lid 2 of the palletised box (Fig. 2) comprises the recesses 6, 7, 8 and 9 in which are disposed the seats for the closures for connecting the laminar element, as will be described in detail hereinafter. Similarly in said upper face, the lid comprises three rows of locating lugs adjacent to the large sides of

the lid and which are indicated by the reference numerals 10, 10', 10" and 11, 11', 11" respectively, assuming the form substantially of a truncated pyramid with rounded edges and comprising a third central row of locating lugs which are indicated by the reference numerals 12, 13 and 14, the two end lugs, in other words those indicated by reference numerals 12 and 14 being substantially in the form of a truncated cone of which the base is a segment of a circle, as shown in Fig. 5, while the locating means 13 of the central portion assumes the form of a circular truncated cone. Said locating means coincide in size and position with those of the platform 1 shown in Figs. 7 and 9 which illustrate the seats of mating shape of the lateral rows 15, 15' and 15" on one of the sides and 16, 16' and 16" on the other side, the corresponding central seats indicated by reference numerals 17 and 18 being for the end seats and 19 for the central seat. This allows rapid centring and retention of the box and lid for the stacking thereof.

[0010] To allow the coupling and retention thereof in the folded position, as shown in Fig. 2, said platform and lid having engagable structures for the folding thereof, and the lid 2 also has a plurality of peripheral flanges which project through its lower face, as shown in the figures illustrating two of them for each of the large sides, those on the corresponding side shown in Fig. 4 being indicated by reference numerals 20 and 21. Identical flanges are arranged in an identical arrangement on the opposite side, as shown in Fig. 6 which also shows one of the flanges 22 of the opposing side. Said flanges have the form of an anti-withdrawal retention means or hook at their ends, as shown by reference numerals 23 and 24 in Fig. 6, so that, after being introduced into the corresponding apertures in the platform, shown in Figs. 7 and 9 by reference numerals 25 and 25' on one of the large sides and 26 and 26' on the opposing side, the lid is retained on the platform, assuming a compact and rigid structure as shown in Fig. 2 in which the palletised box is completely folded assuming very compact dimensions which allow easy storage and transport thereof.

[0011] A further characteristic of the palletised box forming the subject of the present invention relates to the production of assemblies of detachable sliders which are illustrated in Figs. 11 to 13, each assembly being made up of three elements corresponding to the sides and the centre of the box respectively and being designated in said figures by reference numerals 27, 28 and 29. Said sliders are elongate parts with a plane lower face, as shown in Fig. 11, to allow the easy displacement thereof on roller tracks or other surfaces and comprising, on the opposing face, in other words on the upper face, groups of locating means having a form similar to those of the box and lid and which have been described hereinbefore, which have been indicated by their truncated pyramid shape designated by the reference numerals 30, 30' and 30" for the slider 27 and 31, 31' and 31" for the slider 29. The slider element 28 has terminal locating means 32 and 32' in the form of a truncated cone with the base in the form of a segment of a circle and a central projection or protuberance 32" in the form of a circular truncated cone. Said sliders are complemented by further groups of protuberances, sometimes of a male and female type arranged in pairs adjacent to each of the aforementioned locating means, the pair of respective male and female locating means 33 and 33' being shown, for example, which correspond to the protuberance 30 and are combined with seats of mating shape of the lower protuberances on the platform, in a corresponding number, those corresponding to a row of one of the larger sides being designated by reference numerals 34, 35 and 36 in Figs. 8 and 10 and by 37 and 38 which complement the row of the smaller side shown by reference numerals 36 to coincide with the corresponding row of the large side. Owing to this arrangement of male and female locating means and projections of the sliders and of the protuberances of the platform, it is possible to couple each of the sliders 27, 28 and 29 in the corresponding row of protuerances of the platform in a simple and rigid manner, as can be seen in particular in Figs. 1, 2, 18 and 19.

[0012] The lid and platform of the palletised box have means for joining the two elements together by strapping which, as indicated, is especially suitable when the platform and the lid of the box are used to contain other smaller boxes which, when assembled, make up a parallelepiped form similar to that shown in Figs. 18 and 19 which corresponds to the use of a laminar element for lateral closure or a carton.

[0013] To allow the above-mentioned strapping, suitable apertures are arranged in the sides of the box 2, indicated in Fig. 1 by reference numerals 39 and 40 which correspond to similarly arranged apertures in the platform to allow strapping.

[0014] As mentioned, when the palletised box utilises the laminar element for lateral closure of the carton, locking elements will be arranged on the lid and the platform to retain said laminar element. Said closures comprise transversely displaceable tongues which are introduced into apertures of said laminar element or carton. The precise constitution is shown in Figs. 14 to 17. Said figures show one of the closures made up of an upper part 41 and a further, lower part in the form of a catch 42 which receives the upper part 41 in its central hollow 43 and a guide 44 in which the lateral flanges 45 of the lower part 42 meet. The two parts 41 and 42 are arranged on the respective upper and lower part of one of the multiple seats 46 arranged in the bottom of the corresponding cavities of the platform and the lid, as shown by reference numerals 6 to 9 in Fig. 2. The seat 46 has a form resembling a figure-of-eight in a plan view (Fig. 17), so the projecting portion in the form of a smooth truncated cone 47 of the lower part 42 can slide through the interior of said seat having retention positions in the relatively enlarged end portions of the seat 46 in which the entry of the protuberance 47 after passing through the narrower intermediate zone 48 will provide a clear

sensation of retention and will indicate acoustically to the user that the fastener has been displaced to one or other side, in other words is in the closure position or is open.

[0015] The injection-moulded formation of the lid and the platform of the palletised box forming the subject of the present invention allows the production of reinforced zones of complex shapes in both the lid and the platform, Fig. 5, for example, showing multiple ribs 49 and 50 on the lid 2, which are substantially arranged in a mutually perpendicular disposition parallel to the large sides of the lid, Fig. 9 showing the platform 1 equipped with multiple ribbing such as 50 and 51 which are mutually perpendicular and parallel to the sides of the platform complemented in certain zones, in a modular form, by further ribs arranged diagonally, in other words obliquely to the ribbing 50 and 51 and with points of intersection both in the centre of each of the zones and at the vertices thereof.

[0016] By way of example, two of said reinforcing ribs have been designated by reference numerals 52 and 53. However, it will be appreciated that the modular arrangement of assemblies of mutually perpendicular ribs mating with further, diagonally arranged ribs, extends over the majority of the internal face of the platform, as shown in Fig. 9, without merely covering the plane zones such as those indicated by reference numerals 54, 55 and 56 in which the stacking locating means are arranged.

[0017] A further characteristic of the palletised box forming the subject of the present invention resides in the special arrangement for stacking in which, after the partial engagement of the stacked parts, there are provided free zones with free steps for the manual holding thereof.

Claims

1. Palletised box comprising an assembly formed by a lower platform and an upper lid, both produced by injection moulding of thermoplastic material, and optionally an intermediate element of the folded laminar type, the upper face of the lid part comprising rows of locating means which are parallel to the large sides and disposed along a central zone, **characterised in that** the lid comprises a plurality of aligned cavities in the vicinity of the large sides and containing, in their interior, retaining catches for the laminar element for lateral closure of the box and **in that** the lateral edges of the lid have lower projecting flanges with retaining profiles and capable of engaging in opposing apertures of the platform while being retained by said retaining profiles, said platform and lid comprising respective engaging structures for forming a folded assembly in which the aforementioned flanges of the lid are introduced in corresponding apertures of the platform, the internal space between platform and lid being sufficient to receive the laminar element for lateral closure of the box in the folded position.

2. Palletised box according to claim 1, **characterised in that** the lower protuberances of the platform, disposed in the form of rows parallel to the large sides, comprise, in their lower base, seats which are shaped so as to mate with projections of respective detachable profiles which constitute sliders capable of being retained with a press fit in said seats and comprising a plane lower face to allow displacement of the palletised box on roller tracks and the like.

3. Palletised box according to claim 2, **characterised in that** the sliders which may be coupled in the lower faces of the lower protuberances of the platform comprise, in conformity with said protuberances, respective pairs of projections optionally with a male and female structure having a form which mates with those of the projecting protuberances of the platform to produce the rigid but detachable coupling of the sliders, offering their smooth lower faces to allow displacement of the box thereon.

4. Palletised box according to claim 1, **characterised in that** the interior of each of the cavities for receiving the retaining catches for the laminar element are formed by substantially figure-of-eight-shaped seats in which the cylindrical rod of the catch travels, to determine the respective locking and unlocking positions of the catch in the enlarged zones.

5. Palletised box according to claims 1 and 4, **characterised in that** the locking catches comprise a lower part of laminar shape which travels on the inside of a plane guide and an upper part capable of engaging in the central orifice of said lower part, the two parts being located respectively on either side of the seat in the lid and platform to allow the common displacement thereof in a captive manner.

6. Palletised box according to claim 1, **characterised in that** the lateral faces of the lid have apertures which are congruent with apertures in the platform to allow the arrangement of strap elements to enable the lid to be rigidly connected to the platform, trapping the load between the two elements.

7. Palletised box according to claim 1, **characterised in that** the locating means adjacent to the large sides in the upper face of the lid assume a substantially truncated pyramid-shaped structure with rounded edges, and the projections of the central row assume a truncated cone shape corresponding to segments of a circle at the ends and of circular shape in the central portion.

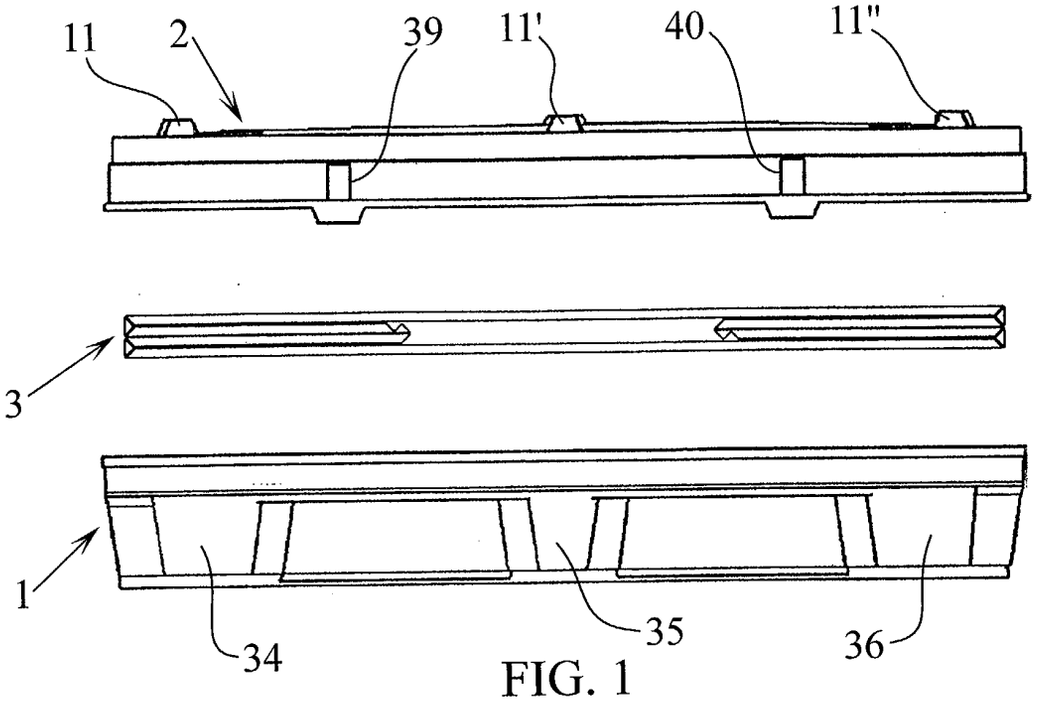

FIG. 1

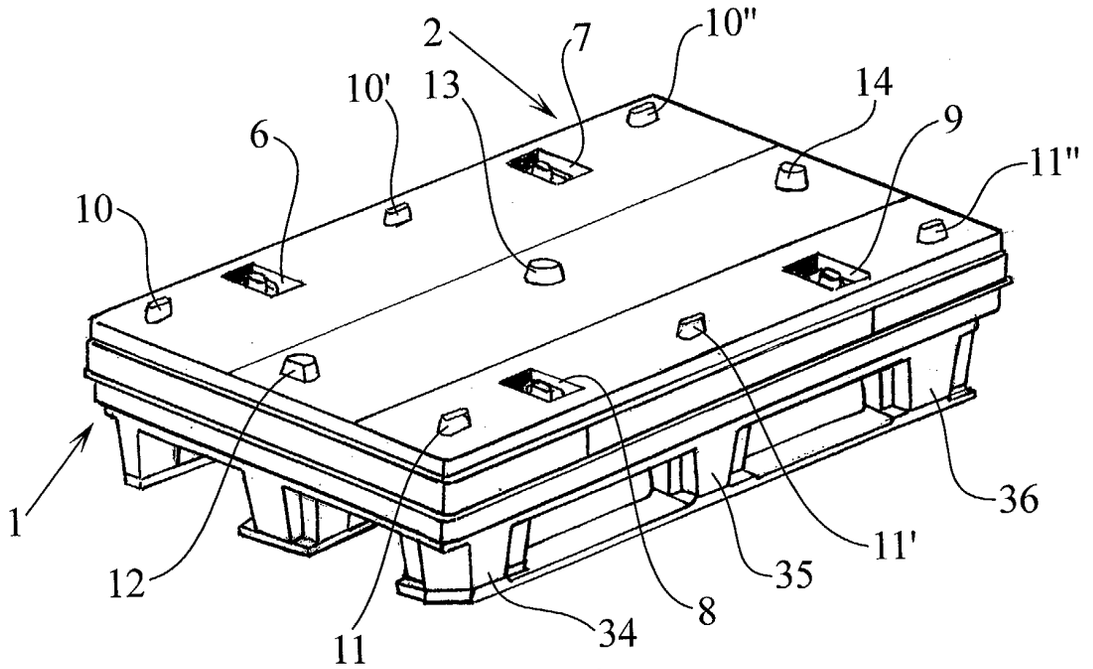

FIG. 2

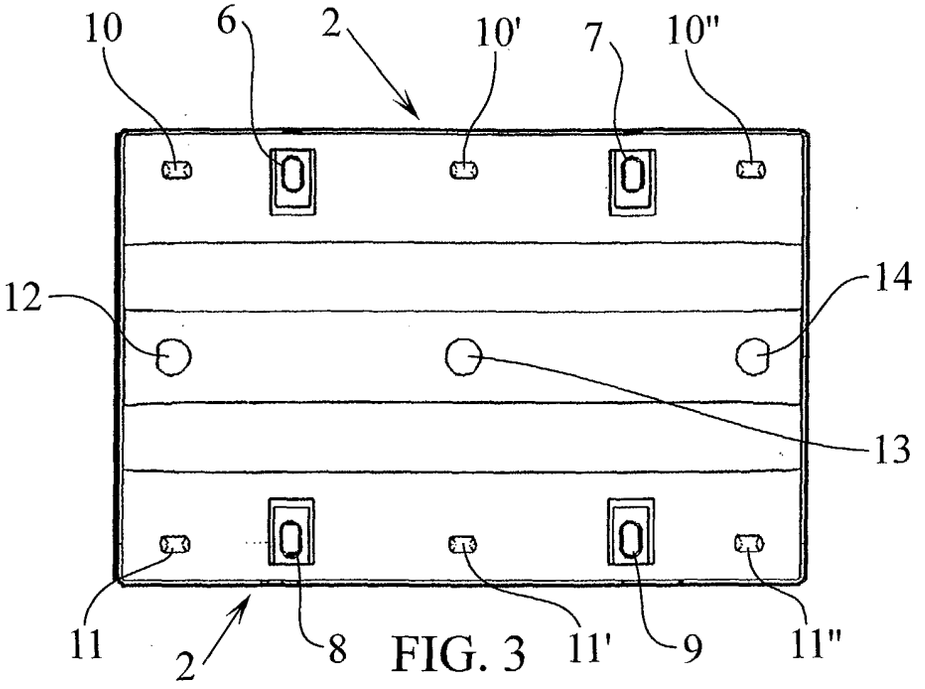

FIG. 3

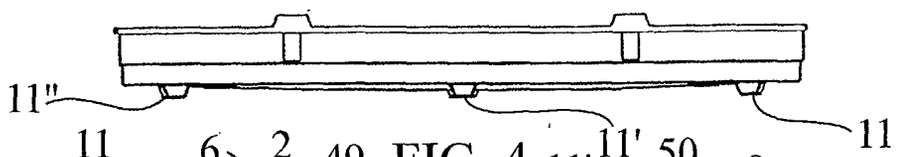

FIG. 4

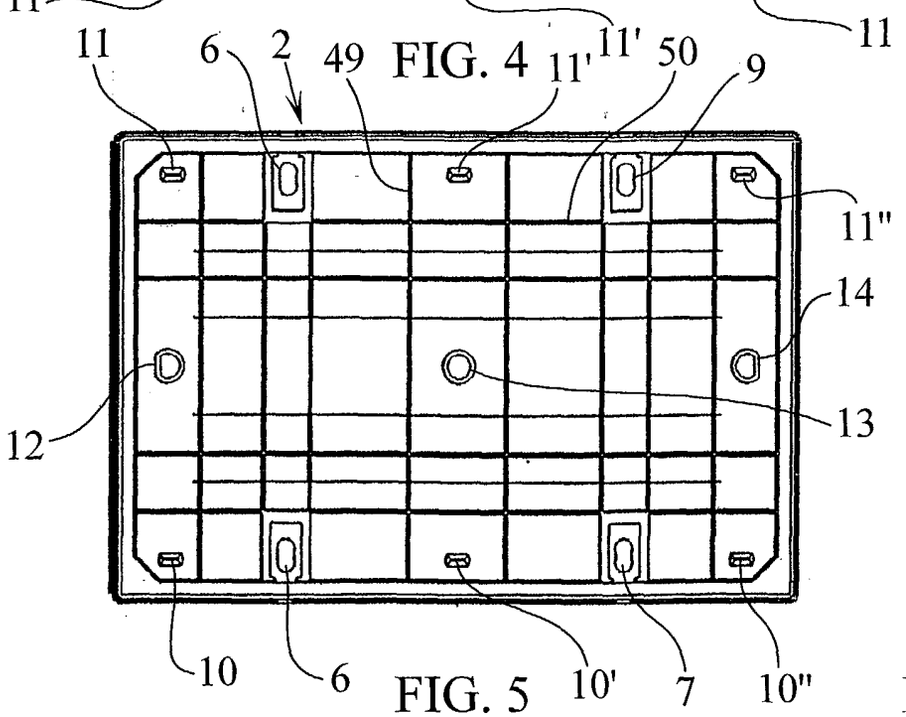

FIG. 5

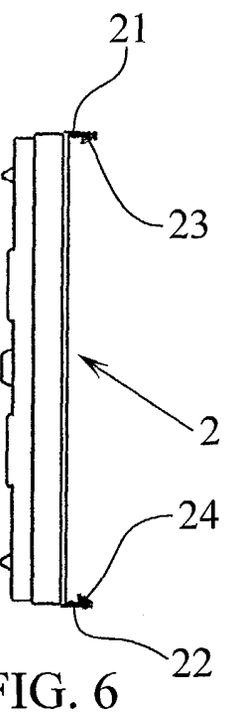

FIG. 6

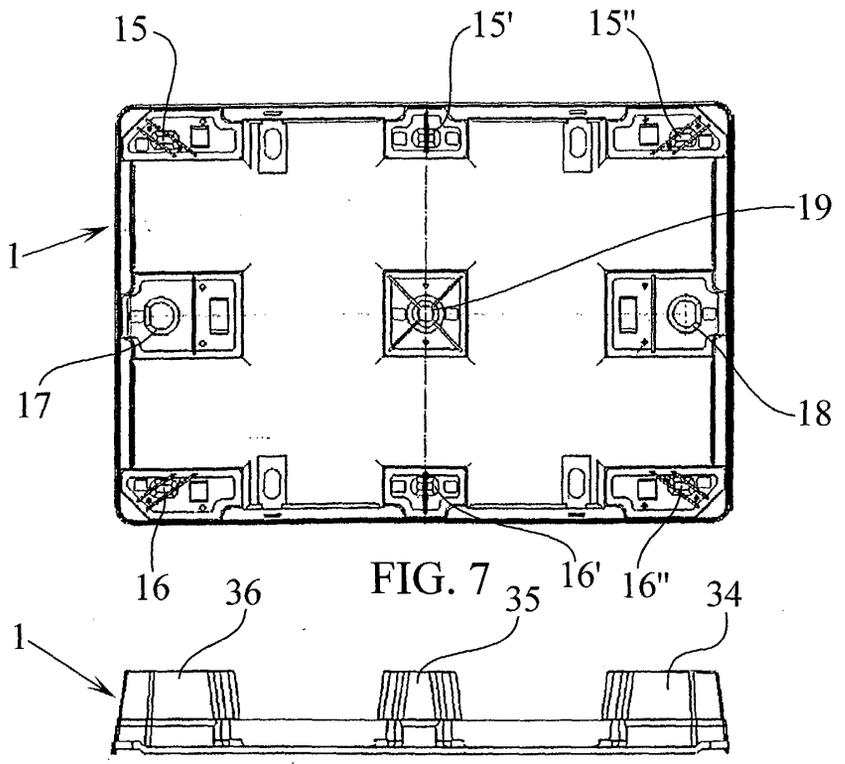

FIG. 7

FIG. 8

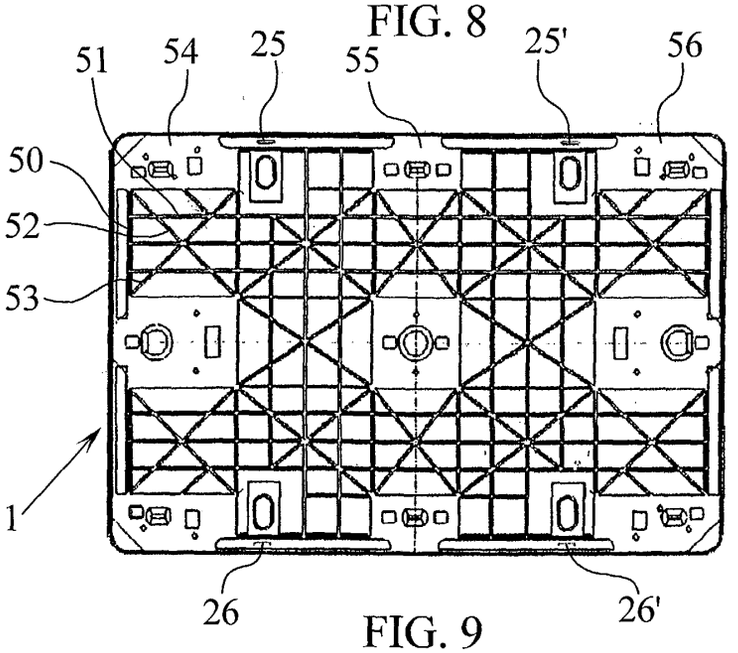

FIG. 9

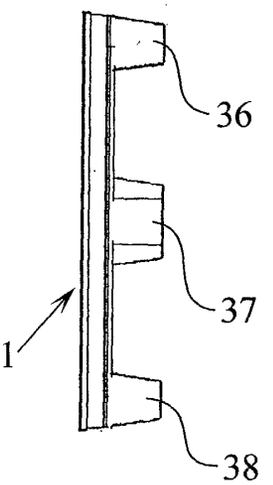

FIG. 10

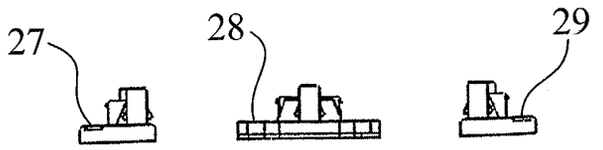

FIG. 11

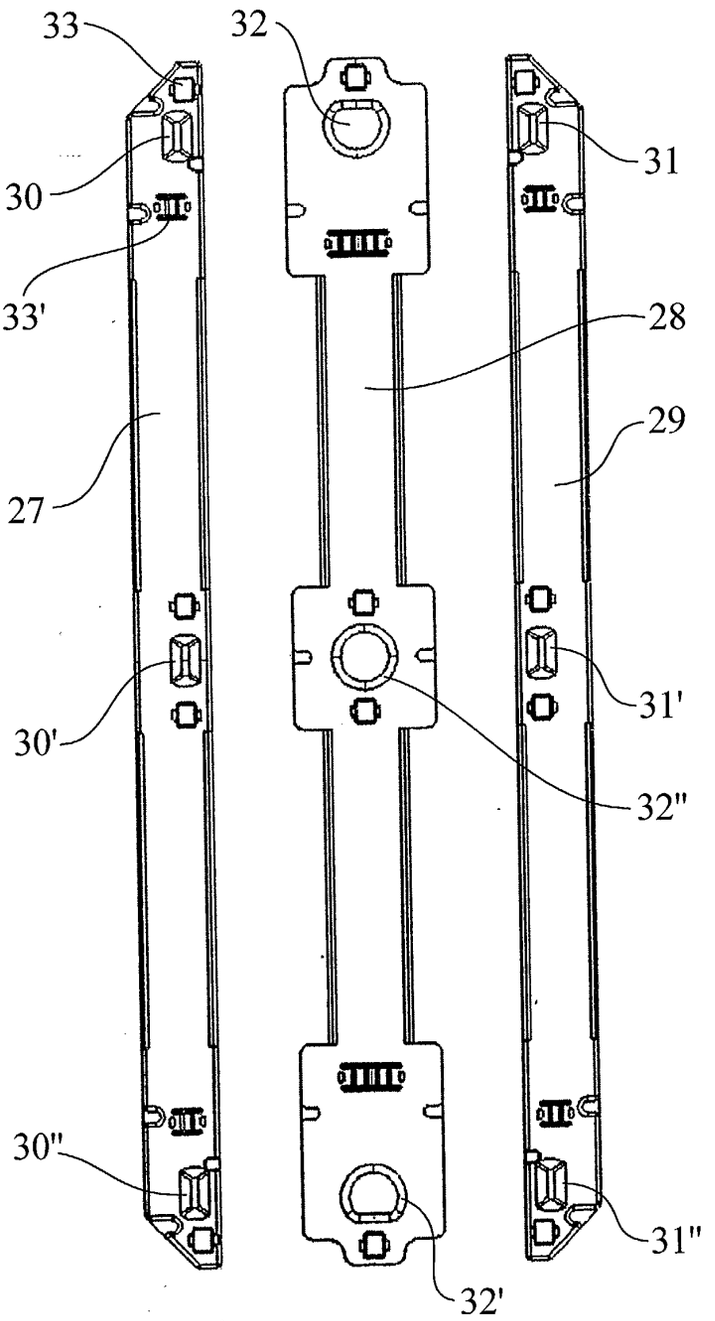

FIG. 12

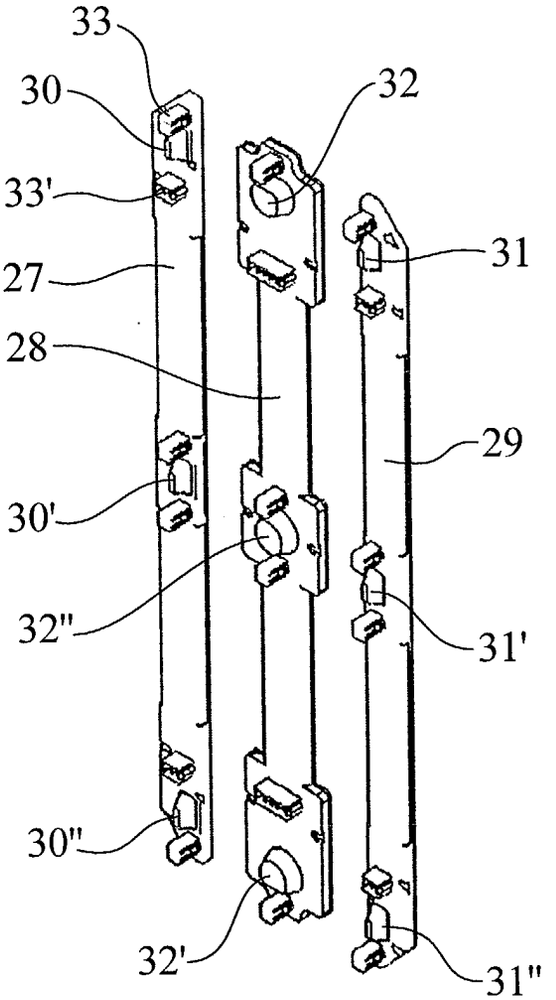

FIG. 13

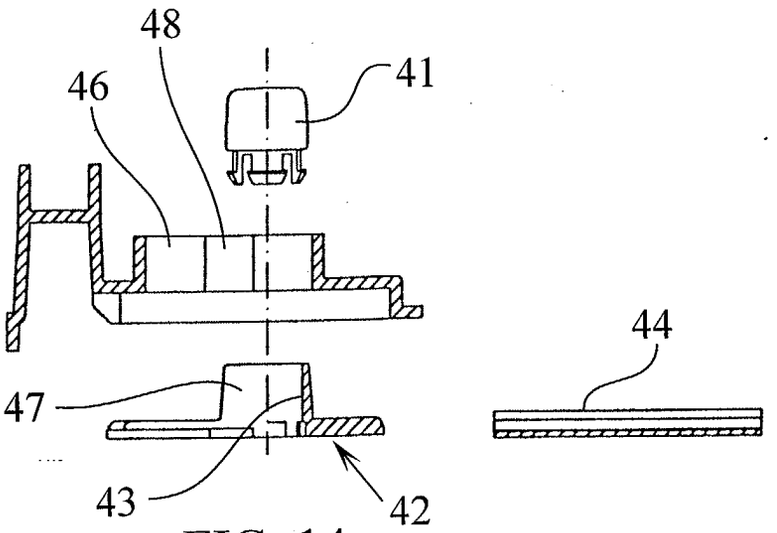

FIG. 14

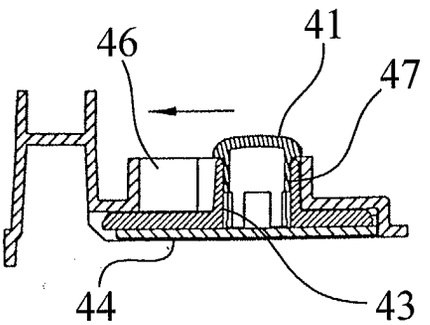

FIG. 15

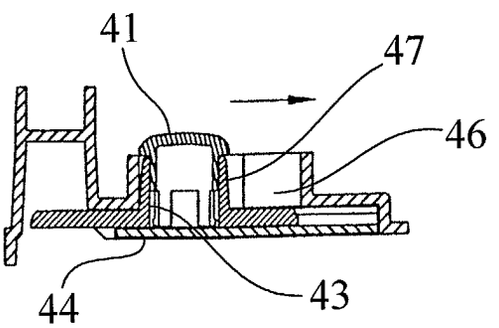

FIG. 16

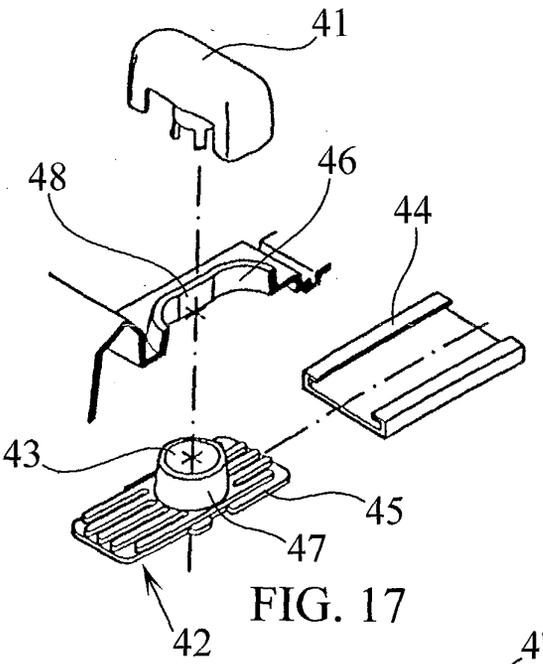

FIG. 17

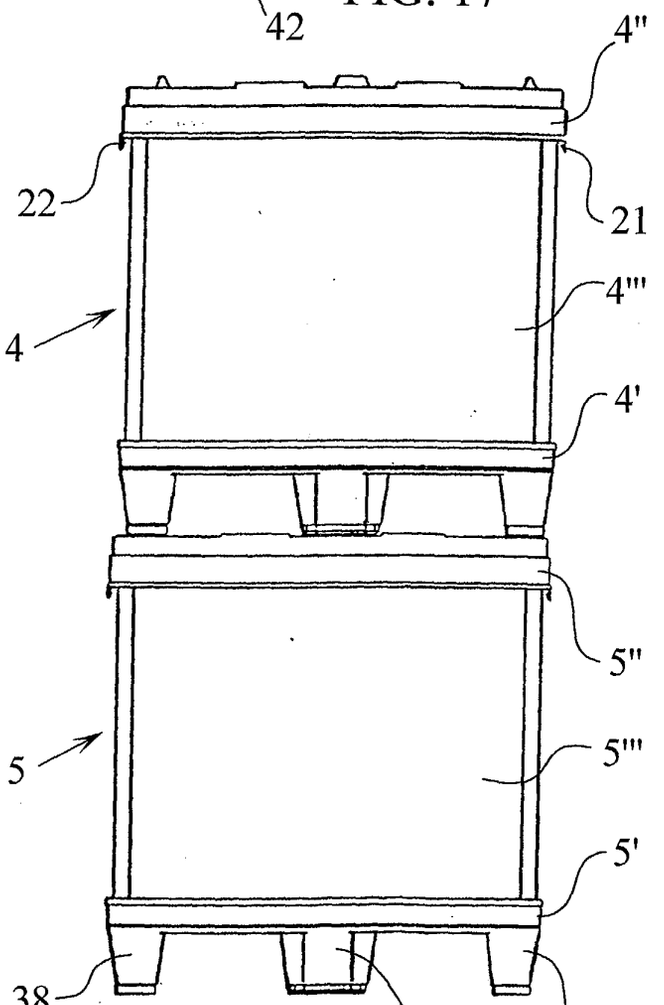

FIG. 18

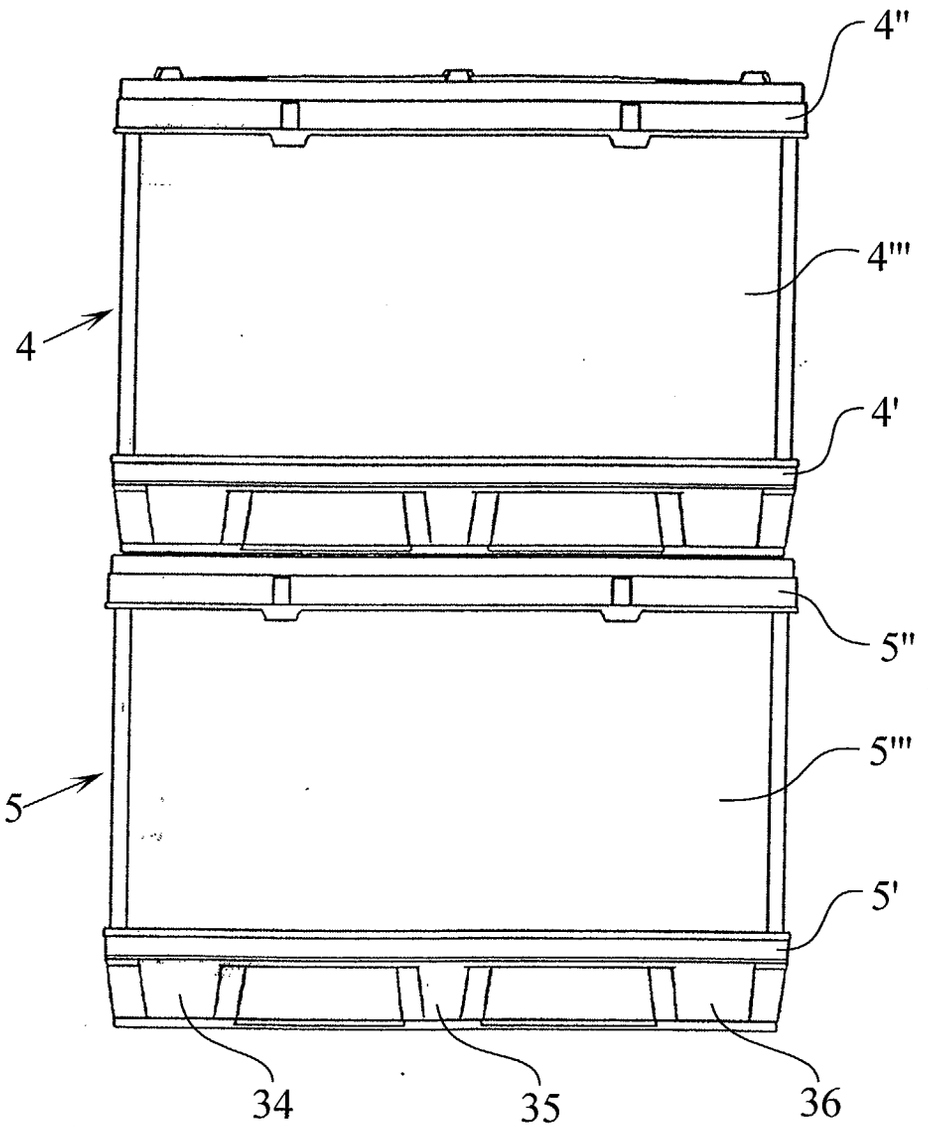

FIG. 19

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EUROPEAN SEARCH REPORT

Application Number
EP 03 38 0263

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	20 February 2004	Rodriguez Gombau, F

CATEGORY OF CITED DOCUMENTS

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