United States Patent [19]

Skahan

[11] **3,910,202**

[45] **Oct. 7, 1975**

[54] **PALLET CONSTRUCTION**

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[73] Assignee: **Air Sea Packaging Inc.,** Dorval, Canada

[22] Filed: **June 24, 1974**

[21] Appl. No.: **482,515**

[52] **U.S. Cl.** **108/51**

[51] **Int. Cl.²** **B65D 19/00**

[58] **Field of Search** 108/51, 53, 54, 56, 58

[56] **References Cited**

UNITED STATES PATENTS

3,610,172	10/1971	Wharton	108/51
3,677,436	7/1972	Danielson	108/53

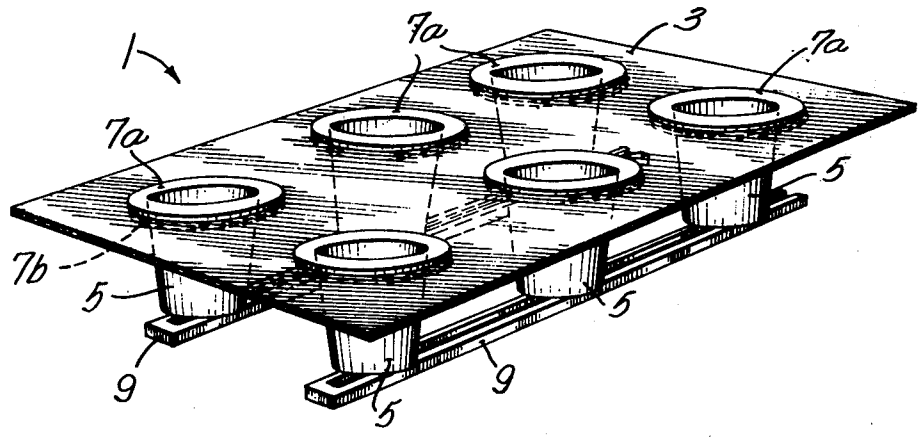
Primary Examiner—James C. Mitchell

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[57] **ABSTRACT**

This invention relates to an improvement in a pallet comprising a platform of corrugated fiberboard, or other suitable board material, supported on molded plastic legs, the bottoms of the legs being connected by bottom runners. More specifically, the invention relates to a novel connection means for connecting the bottom runners to the leg bottoms. In accordance with the invention, the connection means are slidable along the top surface of the bottom runner in a channel in the bottom runner. The connection means comprise resilient caps which have a normal shape larger than openings in the leg bottoms. The caps are deformable under pressure, to a size smaller than the openings, and are adapted to snap back to their normal shape when the pressure is released. The resilient caps are holdingly retained in the channel by a base portion to which they are connected by an attachment column. When the resilient caps are inserted into the openings in the leg bottoms, they snap back to their normal shape so that the legs are connectably attached to the bottom runners.

10 Claims, 8 Drawing Figures



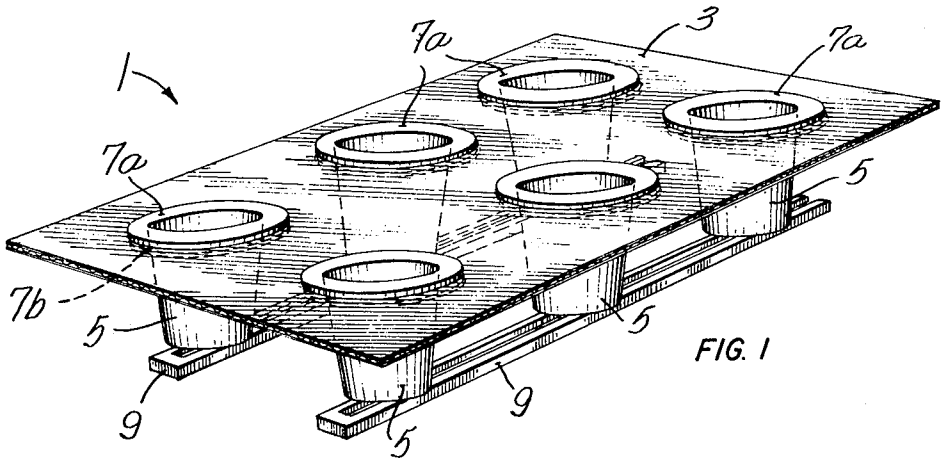


FIG. 1

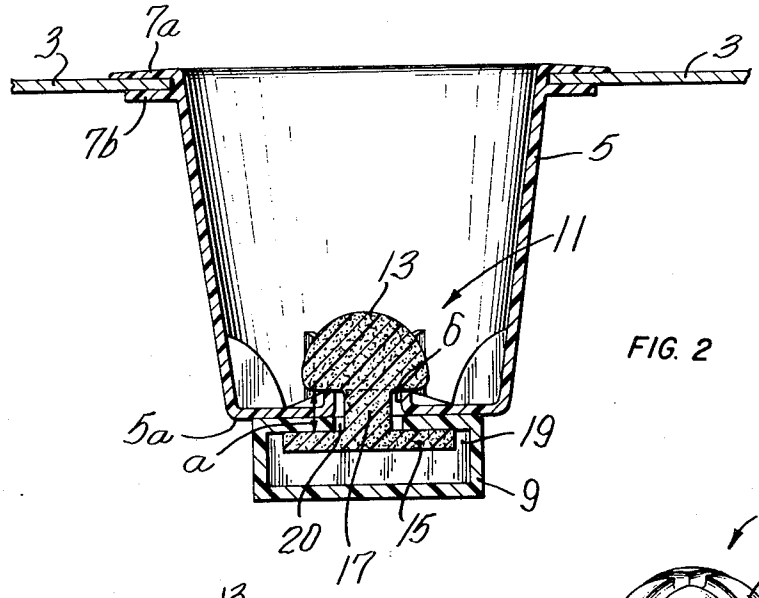
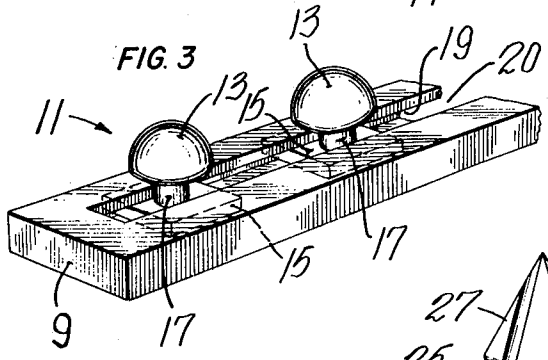


FIG. 2

FIG. 3



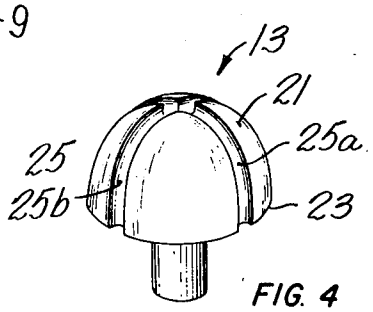


FIG. 4

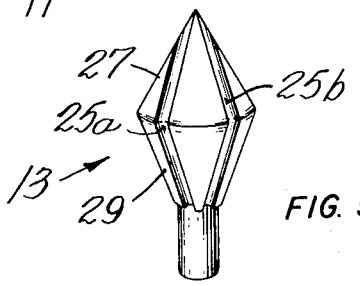


FIG. 5

FIG. 6A

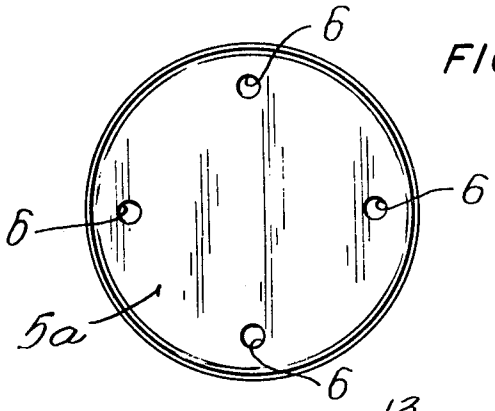


FIG. 6

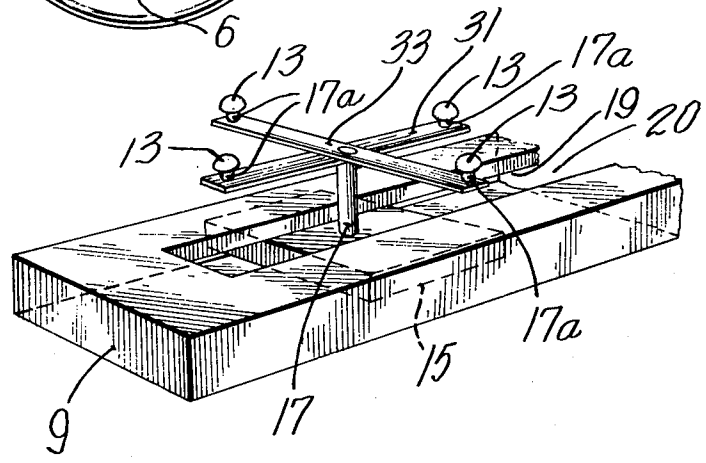
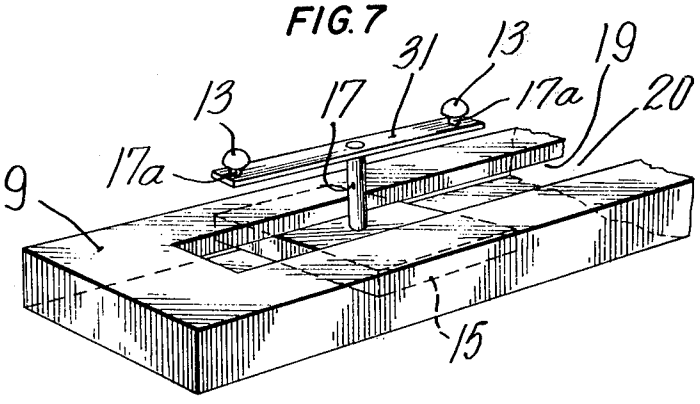


FIG. 7



PALLET CONSTRUCTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an improvement in a pallet, which pallet comprises a plat form of corrugated fiberboard or other suitable board material such as solid fiberboard, plywood, or other sheet material, supported on molded plastic legs, the bottoms of the legs being connected by bottom runners. More specifically, the invention relates to a novel means for connecting the bottom runners to the bottoms of the legs.

2. Statement of the Prior Art

U. S. Pat. Nos. **3,199,469,** Sullivan, and **3,696,761,** Brown, and **3,702,100,** Wharton, all teach plastic pallet constructions including molded plastic legs. However, the pallets in these patents do not include bottom runners. The lack of such bottom runners leads to problems of stability in such pallets which have been overcome in, for example, U. S. Pat. Nos. **3,610,172,** Wharton, and **3,699,901,** Cook **111,** which teach the use of bottom runners in association with such plastic pallets. However, in the last two mentioned patents, the runners must be in registration with the leg bottoms and made specifically for certain platform arrangements. There is no flexibility in being able to use interchangeable runners, and errors in registration during production is fatal in these designs.

U. S. Pat. No. **1,832,771,** Hallowell et al is directed at means for attaching legs to a platform.

SUMMARY OF THE INVENTION

In accordance with the invention, these, and other, disadvantages are overcome with bottom runners for a pallet, said pallet comprising a platform supported by a plurality of spaced hollow legs, the bottoms of said legs being adapted to be connected to said bottom runners to provide an extended bottom surface for said pallet in a plane substantially parallel with said platform;

each bottom runner comprising;

means movable along a top surface of said bottom runner, a separate one of said means being connectable to the bottom of a separate one of said legs.

Preferably, each bottom runner comprises channel means extending along the length of said bottom runner, said movable means being slidable in said channel means.

To co-operate with the novel bottom runners, the bottoms of the legs should comprise openings. The movable means can consist of a base portion, having a width greater than the width of an opening in the top surface of the runner which communicates with the channel means, and being holdingly located in the channel means, an attachment column extending upwardly through said opening from the base portion and terminating above the top surface of the bottom runner, and resilient cap means at the top of each attachment column, the resilient cap means, in its normal shape, being larger than the opening in the leg bottom, the resilient cap being deformable, under pressure, to be smaller than the opening in the leg bottom and being adapted to snap back to its normal shape when the pressure is released;

whereby the resilient cap means can be deformed to be inserted through the opening in the leg bottom, and whereby, after the resilient cap means has passed through the opening in the leg bottom, it will snap back to its normal shape so that the bottom runner will be holdably attached to the leg bottom.

In one embodiment, the top of each attachment column contains cross-bars, and resilient caps are located at both ends of each cross-bar.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood by an examination of the following description, together with the accompanying drawings in which:

FIG. **1** is a perspective view of a pallet with bottom runners as known in the art;

FIG. **2** is a section through one of the legs of the pallet illustrating the novel bottom runner to pallet leg connection means;

FIG. **3** is a perspective view of part of a bottom runner in accordance with the instant invention and illustrates how the connection means are movable along the bottom runner;

FIG. **4** illustrates one embodiment of the cap means of the connection means;

FIG. **5** illustrates a second embodiment of a cap means of the connection means;

FIG. **6** is a further embodiment of the connection means; and

FIG. **6A** is a bottom view of a bottom surface of a depending leg for use with the connection means as shown in FIGS. **6** and **7**;

FIG. **7** illustrates a still further embodiment of the connection means.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring now to the drawings, FIG. **1** illustrates a pallet **1** having a platform **3,** leg members **5** and bottom runners **9.** The bottom runners provide an extended surface along the bottom of the pallet relative to the surface which would be provided by the legs alone. The bottom surface is substantially parallel to the platform. The platform is made of a sheet material, rigid enough to support a load and flexible enough not to give under slight overload conditions, such as corrugated fiberboard, solid fiberboard, plywood, or other similar sheet material. As can be seen in FIG. **2,** the leg member is a hollow cup and may be molded of a plastic material. The leg member includes lips *7a* and *7b* by which the cup is attached to the platform **3.**

FIGS. **2** and **3** illustrate a channel **19,** extending longitudinally in the bottom runner. An opening **20,** in the top surface of the runner, communicates with the channel.

In FIG. **2** an opening **6,** at the bottom of the leg, receives connection means **11** to connect the bottom runner **9** to the leg bottom. The connection means comprises a resilient cap **13,** a base member **15,** and an attachment column **17** extending upwardly from the base member through the opening **20** on the top surface of the bottom runner, and above the top surface of the bottom runner. The attachment column attaches the resilient cap to the base member and is of a height which is slightly less than the thickness *a* so that the bottom runner is tightly held against the bottom of the leg of the pallet.

As can be seen in both FIGS. **2** and **3,** the width of the base member **15** is greater than the opening **20** so that the attachment means is retained in the channel **19.** However, the height of the base member **15** is less

than the height of the channel **19** and the width of the base member **15** is less than the width of the channel **19** so that the connection means **11** is slidable in the channel **19.**

As can be seen in FIG. **2,** the cap **13** of the connecting means **11** is larger than the opening **6** in the leg bottom. In order for the cap to be insertable into the opening, it must be made of a resilient material so that it can be deformed, under pressure, to be smaller than the opening **6.** At the same time, as soon as the cap is passed through the opening, and the pressure is released, it will snap back to its original size and so will be held in the hollow of the leg member. The cap may have hemispherical shape with a flat bottom, however, it may be cone shaped as shown in FIG. **5.**

With the cap as shown in FIG. **2,** it would be very difficult to deform the hemisphere while it is in the leg to remove the connection means from the leg so that the bottom runners constructed in accordance with FIG. **2** are essentially not reusable. In order to make the runners reusable, the caps can be provided with cross-slits **25***a* and **25***b* as shown in FIG. **4.** In addition, the bottom part of the cap can be formed as a second hemisphere **23** (below the top hemisphere **21**) to further ease the removal of the cap from the leg. It is also preferred that the two hemisphere embodiments be provided with cross-slits as shown in FIG. **4.** With the slits, it is relatively easy to squeeze the cap with the finger tips and to deform it so that it is smaller than the opening **6.**

The conical arrangement of FIG. **5,** having a top cone **27,** can also be provided with a bottom cone **29,** and with cross-slits **25***a* and **25***b.*

The arrangement shown in FIGS. **2** and **3** is best accomodated by a leg which has only one opening at the bottom. In some cases, the bottom of the leg may contain a plurality of openings **6,** close to the periphery of the leg bottom, as shown in FIG. **6A.** In such cases, it would be preferable to use the connection means shown in FIG. **6.** In FIG. **6,** connected at the top of the attachment column **17** are cross-bar members **31** and **33** which extend at right angles to each other and in a plane at right angles to the column **17.** At substantially the ends of the cross-bar members are further connection columns **17***a*, and at the top of each column **17***a* is a cap **13.** Each cap would be inserted in a different opening **6,** of FIG. **6A** and the caps would be shaped as the caps in FIGS. **2, 4** or **5** or reasonable facsimiles thereof. With the leg bottom of FIG. **6A,** it is also possible to use only one cross-bar **33,** as shown in FIG. **7,** or **31.** In this case, caps would be inserted in only two openings of the leg bottom.

Although FIG. **1** illustrates a separate bottom runner for each row of legs on the pallet, it will, of course, be appreciated that the bottom runner could comprise a single sheet, as shown in FIG. **9** of U. S. Pat. No. **3,610,172,** mentioned above. In this case, there would be a separate channel and associated opening with associated connection means, for each row of legs. Such a bottom runner might be particularly useful when the pallet contains five legs. A central type channel and associated opening with connection means, would be located under the fifth leg.

Although several embodiments have been described, this was for the purpose of illustrating, but not limiting, the invention. Various modifications, which will come readily to the mind of one skilled in the art, are within the scope of the application, as defined in the appended claims.

I claim:

1. A pallet construction comprising, in combination;
platform means for supporting material;
leg means depending from said platform means, each leg means having at least one opening in the bottom surface thereof;
and runner means connected to said leg means at the bottom surfaces thereof, said runner means comprising, channel means extending along the length of said runners, means moveable along a top surface of said runners and slidable in said channel means, each said moveable means comprising;
a base portion having a width greater than the width of an opening in the top surface of the runner means which communicates with the channel means, and being holdingly located in said channel means;
an attachment column extending upwardly through said opening from the base portion and terminating above the top surface of the runner means; and
resilient cap means at the top of each attachment column;
the resilient cap means, in its normal shape, being larger than the opening in the leg bottom surface, the resilient cap means being deformable, under pressure, to be smaller than the opening in the leg bottom surface and being adapted to snap back to its normal shape when the pressure is released;
whereby the resilient cap means can be deformed to be inserted through a respective opening in a leg bottom surface and whereby, after the resilient cap means has passed through the opening in the leg bottom surface, it will snap back to its normal shape so that the runner means will be holdably connected to the leg bottom.

2. A pallet construction as defined in claim **1** wherein the resilient cap means is hemispherical in its normal shape.

3. A pallet construction as defined in claim **2** wherein the top of said hemispherically shaped resilient cap comprises cross-slits, whereby the runner means is releasably connected to the leg bottom.

4. A pallet construction as defined in claim **1** wherein the resilient cap means comprises a bottom hemisphere and a top hemisphere.

5. A pallet construction as defined in claim **4** and comprising cross-slits in both said bottom hemisphere and said top hemisphere, whereby said runner means is releasably connected to the leg bottom surface.

6. A pallet construction as defined in claim **1** wherein said resilient cap means is conical in its normal shape.

7. A pallet construction as defined in claim **6** wherein the top of said conically shaped resilient cap comprises cross-slits, whereby the runner means is releasably connected to the leg bottom surface.

8. A pallet construction as defined in claim **1** wherein said resilient cap comprises an upper cone and a lower cone, and cross-slits in both said upper cone and said lower cone, whereby said runner means is releasably connected to said leg bottom.

9. A pallet construction as defined in claim **1** for use with a pallet wherein each leg bottom surface comprises four equally spaced openings adjacent the periphery of each leg, and wherein said movable means comprises;

a base portion having a width greater than the width of an opening in the top surface of the runner means which communicates with the channel means;

an attachment column extending upwardly through said opening from the base portion and terminating above the top surface of the runner means;

a cross-bar arrangement at the top end of said attachment column comprising two cross-bars extending at right angles to each other in a plane at right angles to said attachment column and parallel to the top surface of the runner means;

and resilient cap means at the ends of each cross-bar, each said resilient cap being insertable into a different opening in said leg bottom surface.

10. A pallet construction as defined in claim **1** for use with a pallet wherein each leg bottom surface comprises at least two equally spaced openings adjacent the periphery of each leg, and wherein said movable means comprises;

a base portion having a width greater than the width of an opening in the top surface of the runner means which communicates with the channel means;

an attachment column extending upwardly through said opening from the base portion and terminating above the top surface of the runner means;

a horizontal cross-bar at the top end of said attachment column extending at right angles to said attachment column and parallel to the top surface of said runner means;

and resilient cap means at the ends of said cross-bar, each said resilient cap being insertable into a different opening in said leg bottom surface.

* * * * *