United States Patent

[11] 3,601,067

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[21] Appl. No. 813,237
[22] Filed Apr. 3, 1969
[45] Patented Aug. 24, 1971
[32] Priority Apr. 16, 1968
[33] Norway
[31] 1429/68

[54] **DEVICE FOR FIXING PALLET LEGS TO A PALLET PLATFORM OR DIRECT TO THE BOTTOM OF A CONTAINER, AND ALSO PALLETS WITH SUCH LEG FIXTURES**
16 Claims, 13 Drawing Figs.

[52] U.S. Cl. 108/51
[51] Int. Cl. B65d 19/18
[50] Field of Search 108/51–58

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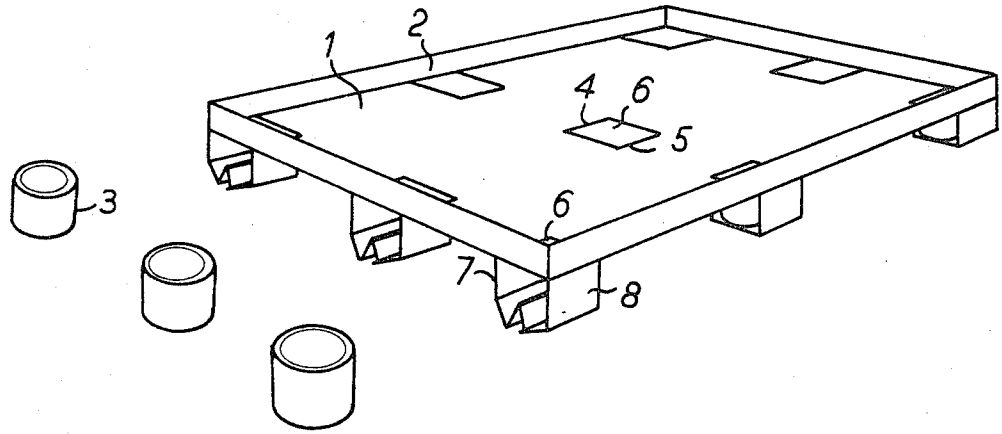
Assistant Examiner—Glenn O. Finch
Attorney—Pennie, Edmonds, Morton, Taylor and Adams

ABSTRACT: The invention relates to pallets and containers, preferably of the disposable type. A device for fixing pallet legs to a pallet platform or direct to the bottom of a container is provided in the form of a strip member, the center part of which is on the upper side of the leg and the ends of which are bent down along the leg, in under the leg and up into the leg. The center part of the strip member may be nailed, tacked or stapled to the platform or container bottom or may be arranged on the upper side of the platform or container bottom, the two ends being threaded through slots in the platform or container bottom.



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4 Sheets-Sheet 1

FIG.1

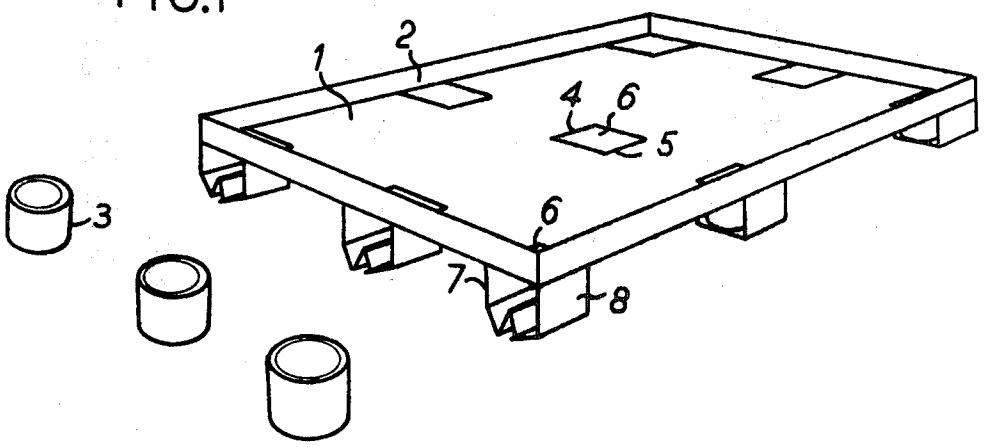


FIG.2

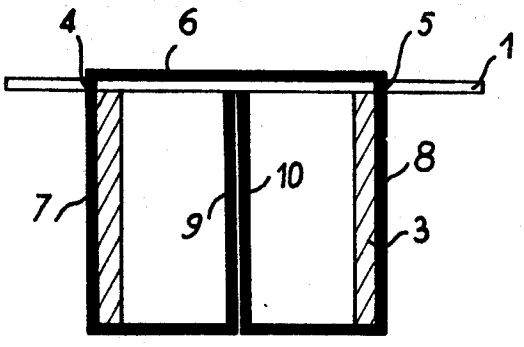
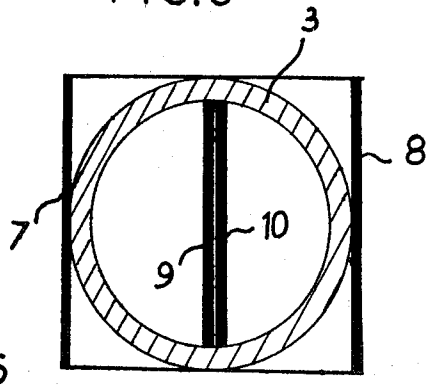


FIG.3



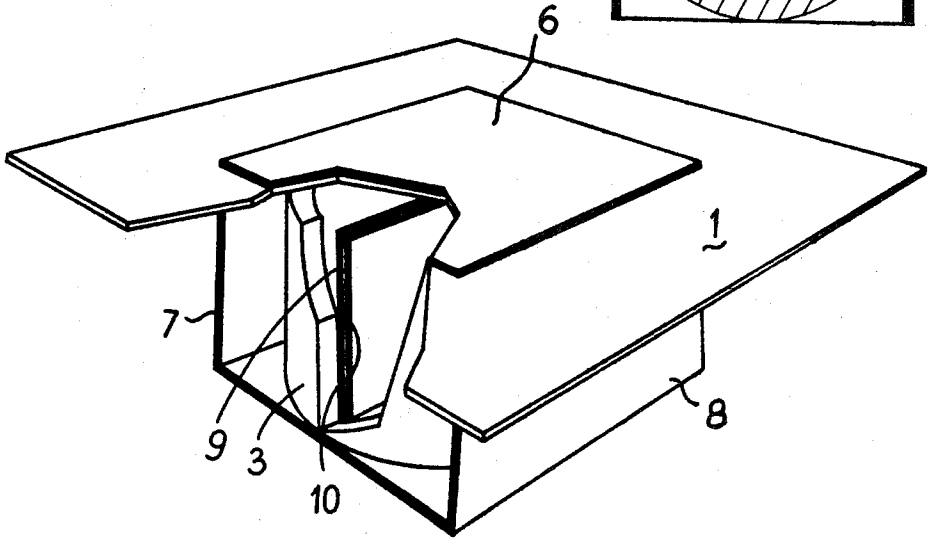


FIG.4

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FIG. 5

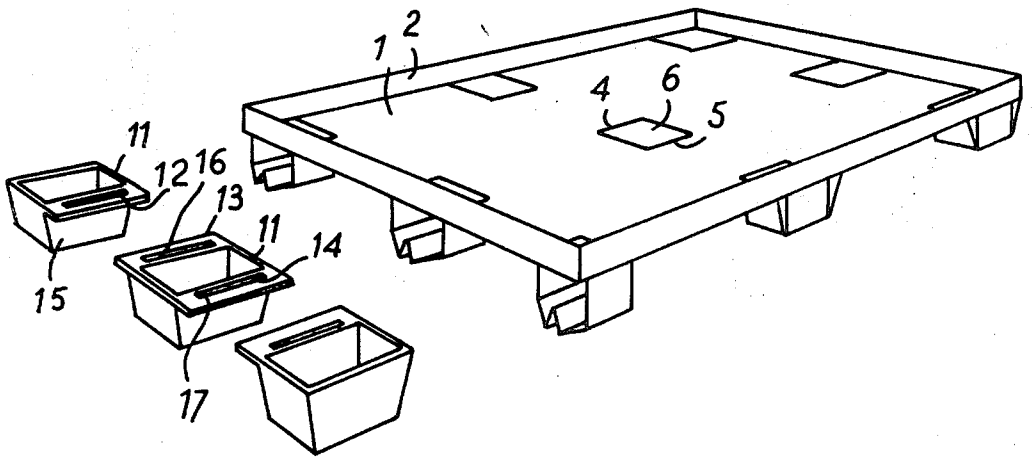


FIG. 6

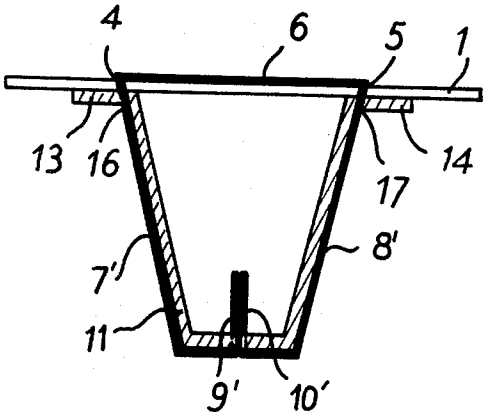
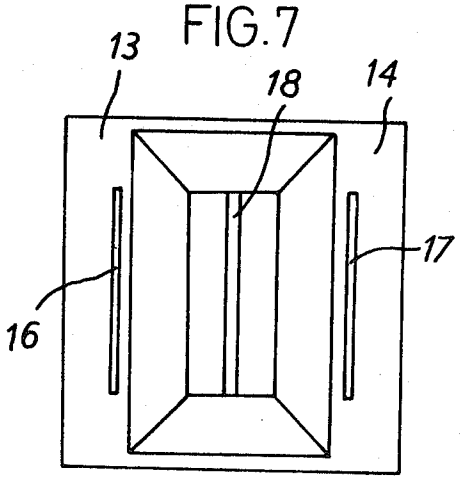


FIG. 7



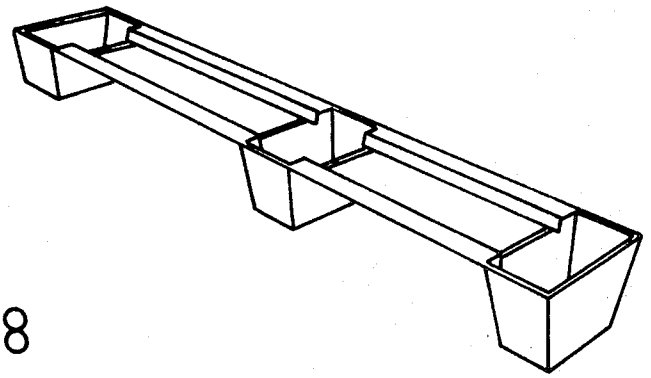


FIG. 8

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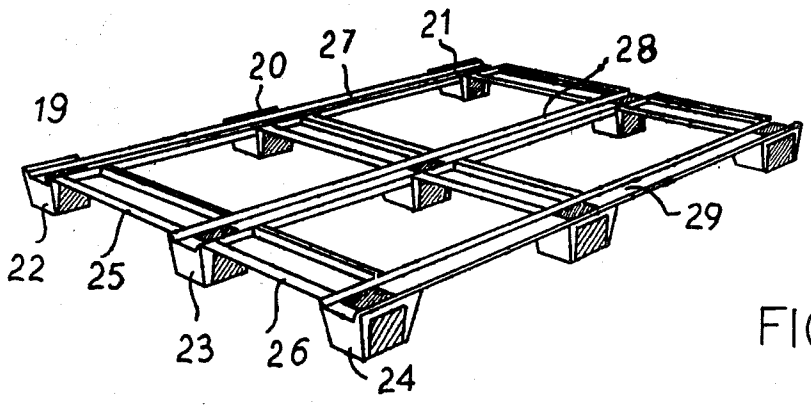

FIG.9

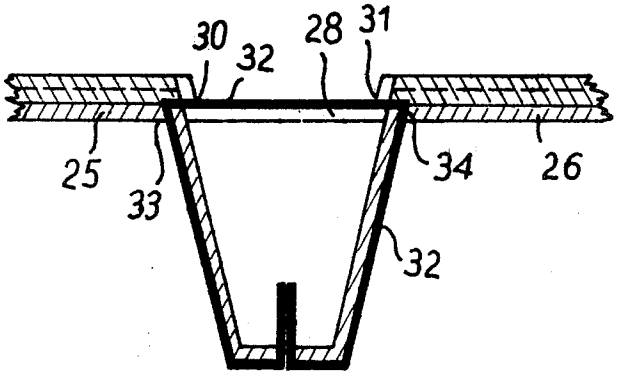

FIG.10

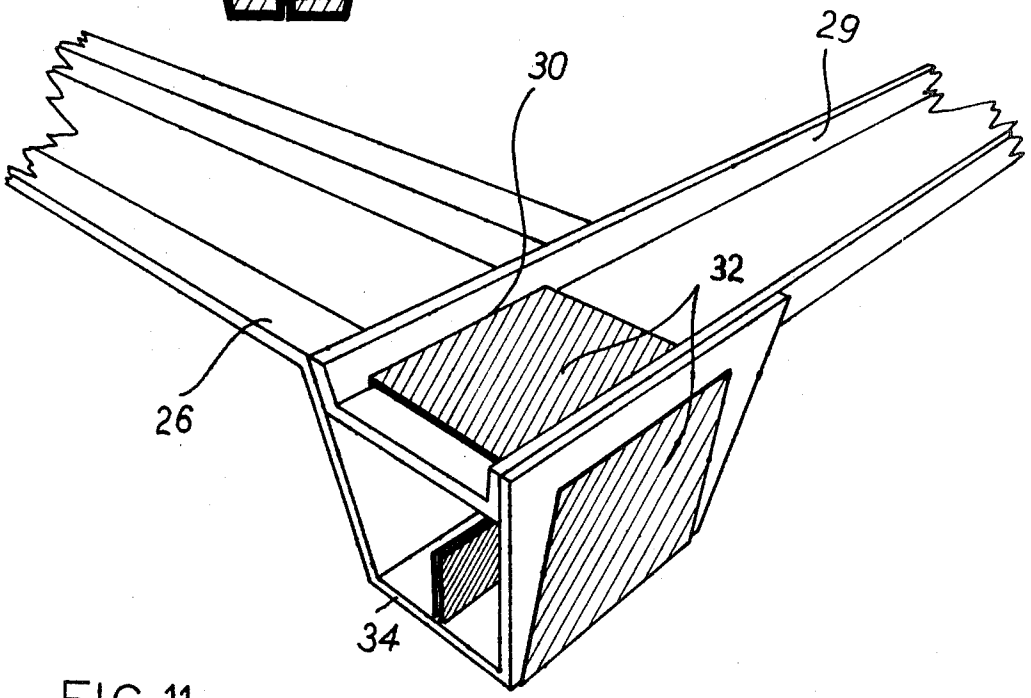

FIG.11

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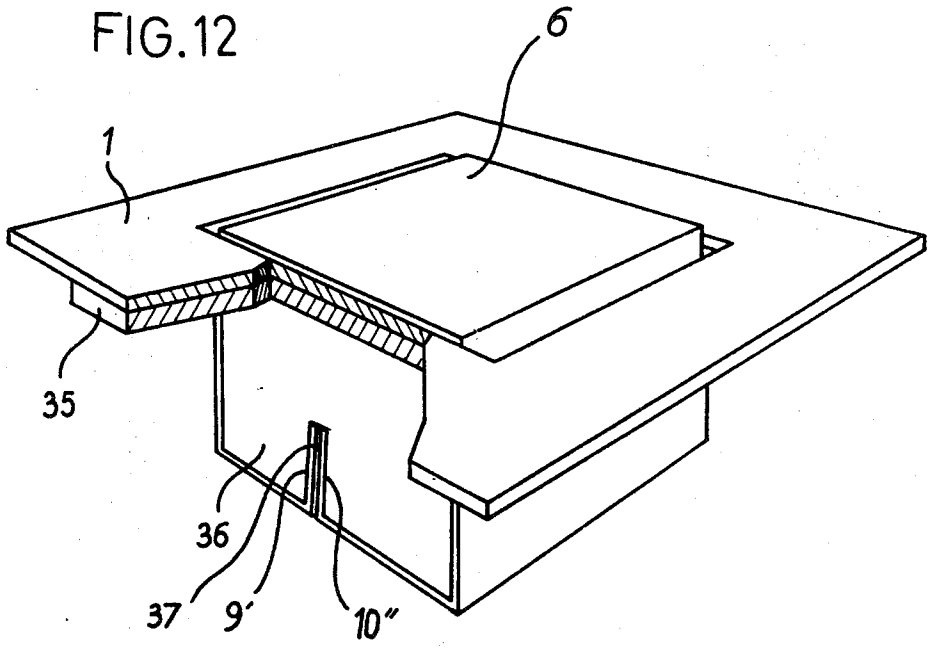
FIG. 12



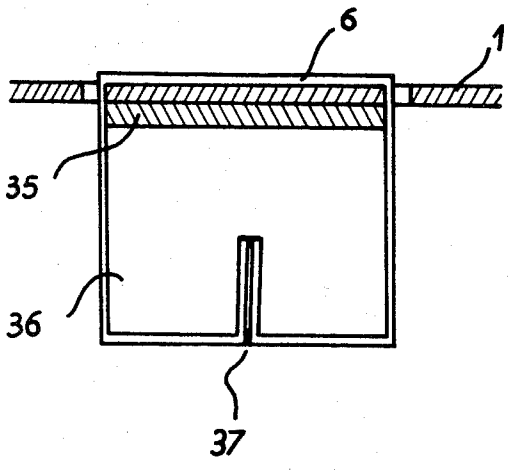


FIG. 13

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DEVICE FOR FIXING PALLET LEGS TO A PALLET PLATFORM OR DIRECT TO THE BOTTOM OF A CONTAINER, AND ALSO PALLETS WITH SUCH LEG FIXTURES

In recent times, so-called pallet transport and container transport have become more and more widespread, and this invention concerns, in its broadest aspect, pallets and containers intended for such transport.

In particular, the invention aims at providing a device for fixing pallet legs to a pallet platform or direct to the bottom of a container. A particular purpose of the invention is to provide a pallet with such leg fixtures.

A pallet is a cargo platform which is used in the transportation and stacking of various materials and goods, and typical of a pallet is that the cargo platform itself, with the help of skids, battens, blocks or the like is held sufficiently off the ground for it to be possible to insert under the pallet lifting apparatus especially constructed for the purpose. The term "pallet legs" shall, as used in this patent, refer to such skids, battens, blocks or the like. In order to facilitate the handling of containers with the help of specially constructed lifting apparatus, containers are also fitted with legs, and the term "pallet legs," as used here, shall also cover supporting devices of this nature.

In order to achieve sufficient solidity and stability, pallets today are mostly made of wood or other solid material, and once they have been assembled, they cannot be dismantled. The price of these pallets is so high that it pays the consignor to cover the cost of return and also the unreasonably large storage space these pallets occupy.

A special object of the invention is to provide a disposable pallet, that is to say a pallet which during manufacture and storage occupies as little space a possible and which just before use may be readily assembled by hand and which after use may be partly fully discarded. Disposable pallets of this type are, in principle, known and are preferably made of corrugated cardboard or solid cardboard. This invention aims at providing fixing devices for pallet legs for disposable pallets of this type. The object is to arrive at a design of fixing device which makes it possible for the pallet legs, which may be made of wound cardboard, plastic, metal or other material to be fixed, in a simple manner to the pallet platform and then to carry self-supporting materials and goods during transportation and packing with stability.

The invention thus refers to a device for fixing pallet legs to a pallet platform or direct to the bottom of a container, and the device, according to the invention, is characterized in that a strip member, preferably of corrugated cardboard or solid cardboard, is arranged with its center part on the upper side of the leg and with the two ends bent down along the leg, in under the leg and up into the leg. The advantage of such a device is that one achieves a simple fitting of the pallet legs to the pallet platform or direct to a container bottom. The strip member can, for example, be nailed, tacked or stapled in its center part to the underside of a pallet platform or under the bottom of a container.

According to the invention, the device can be so designed that the two ends of the strip meet under the leg and are bent up into the leg, the two flat surfaces meeting. This gives a rigid and good fixing device.

Further, according to the invention, the two ends of the strip inside the leg can extend right up to the middle part of the strip thus adding support; this improves the strength, a feature of particular interest when making light legs.

Instead of nailing or stapling the strip members to the underside of a pallet platform or to the bottom of a container, the strip member can be arranged with its center part on the upper side of the platform and be guided down along the respective legs through slots or apertures in the platform.

Expediently, the legs may be in the form of hollow bodies. In this respect, the legs may expediently be made as hollow cylinders, of known principle, of for example wound paper, plastic, metal or other suitable material.

The legs may also, according to the invention, be made as cups, preferably of conical shape, whereby the cups have slots in their bottoms to receive the two ends of the strip member. A cup construction of this type gives relatively strong and light legs, a feature which is of particular significance in so-called disposable pallets where the weight of the pallet has to be kept as low as possible. By making the cups conical, one achieves the advantage, known per se, that the legs can be stacked together in a space-saving manner for transportation to the place of assembly. Expediently, the cups may have a right-angled cross section.

In order to achieve a more stable design, the cups may expediently, according to the invention, have one or more supporting flanges at the opening.

Advantageously, several cups may be joined together independently of the pallet platform. This type of design is of particular interest in those cases where the pallet platform is in the form of a framework, in that the platform then expediently, according to the invention, is built up of at least two rows of interjoined legs, which rows are connected to one another with the help of connecting members lying over the leg regions, whereby the rows and connecting members are held together by the center parts of the respective strip members being arranged on the upper side of the connecting members and being guided down along the legs through slots in the connecting members. In a further development of a pallet of this type, the legs can be formed by bending out parts of an elongated strip member, preferably of metal, and the connecting members, also preferably of metal, are then expediently in the shape of shallow U-sections or -profiles with an external width made to suit the internal width of the leg, and are laid inside the bent out parts.

Expediently, the bent out leg parts and the shallow U-profiles have correspondingly inclined walls.

The legs may also be massive bodies. Preferably they are then made in the form of cubes of foamed cellular plastic material such as polystyrene. These legs are then provided with a slot extending from the bottom face of the massive leg.

In the above, and in the following, reference is made to pallet platforms. The invention is, of course, just as applicable in connection with container bottoms, and the expression pallet platform, or platform, shall here also comprise a container bottom, in that this is to be regarded as a pallet platform for a pallet with walls and perhaps a lid.

The invention will be explained in more detail with reference to the drawings in which

FIG. 1 shows a perspective sketch of a pallet with pallet legs fitted and with three unfitted pallet legs.

FIG. 2 shows a section through a fitted pallet leg.

FIG. 3 shows a horizontal section seen from above through the pallet leg in FIG. 2.

FIG. 4 shows a perspective section, partly broken through, of a pallet in the region of a pallet leg.

FIG. 5 shows a perspective sketch of a pallet with cuplike legs.

FIG. 6 shows a section through a pallet leg of the type shown in FIG. 5.

FIG. 7 shows a top view of a pallet leg of the type shown in FIG. 5.

FIG. 8 shows a design of three interjoined pallet legs.

FIG. 9 shows a pallet made with the pallet platform in the form of a framework.

FIG. 10 shows a vertical section through a pallet leg in FIG. 9.

FIG. 11 shows an enlarged section of a corner of the pallet in FIG. 9.

FIG. 12 is a broken perspective view similar to that of FIG. 4 showing a modified construction, and

FIG. 13 is broken sectional view through the leg shown in FIG. 12.

THe pallet in FIG. 1 is a so-called disposable pallet. The pallet platform 1 is made of corrugated cardboard or solid cardboard and has bent-up side edges 2. The pallet has nine legs of which three are shown unfitted. For legs here, hollow cylindri-

cal bodies 3 are used which, in this case, are made of wound cardboard or plastic. In the pallet platform 1, there where the respective legs are to be fitted, two parallel slots 4 and 5 have been cut in the region of each leg. These parallel slots 4 and 5 are spaced from one another at a distance corresponding to the outer diameter of the wound cylindrical body 3. A strip member 6, in this case of corrugated cardboard or solid cardboard has six fold-lines or ridges, and is threaded through the slots 4 and 5, from the upper side of the pallet platform 1, in such a manner that the center part of the strip member 6 remains on the upper side of the platform. In this manner, two flaps 7 and 8, are produced which protrude down from the platform 1. These two flaps 7 and 8 are, as may be particularly well seen from FIGS. 2 and 4, guided down along the sides of the respective leg 3 and folded in under the leg and continue in towards the middle where the two ends of the strip member meet. Here, the two remaining flaps of the strip 6, flaps 9 and 10 in FIG. 2, are bent upwards and into the leg 3. As may clearly be seen from FIG. 2, the flaps 9 and 10 extend right up to the platform 1 and thus supply extra support.

FIG. 5 also shows a disposable pallet and it is only in the design of the leg that this embodiment differs from that shown in FIGS. 1–4. Therefore for similar parts the same reference numbers have been used in FIGS. 5 and 6. The legs 11 are here in the form of rectangular cups. In order to supply a more stable support, the legs have been provided with a protruding supporting flange 12. The middle cup in the row shown of unfitted cups in FIG. 5, have two such supporting flanges 13 and 14. In each supporting flange 12, and 13 and 14 respectively there is a slot 15, 16 and 17 respectively. In the bottom of each cup there is a central slot 18. The slots 15, 16 and 17 have a width corresponding to the thickness of the strip member 6, whilst the slot 18 has a width corresponding to twice the thickness of the strip member 6. The legs 11 are fitted in about the same manner as the legs 3 in FIGS. 1–4. The strip member 6 is threaded through the slots 4 and 5 in such a way that the center part of the strip member remains on the upper side of the platform 1. The two flaps 7' and 8' are threaded through the slots (16 and 17 in FIGS. 6 and 7) and have been led down along the inclined side of the leg and bent around the lower edge of the leg and inwards towards the center where the end parts of the strip member meet. The remaining flaps 9' and 10' have been bent up and inserted into slot 18 in the bottom of leg 11. The leg is thus locked to the platform 1.

FIG. 8 shows three legs of the same main type as shown in FIGS. 5, 6 and 7, and the three legs have here been interjoined to form one unit. In the connecting bridges between the three legs there are slots to fulfil the same purpose as slots 16 and 17 in FIG. 6. The fitting of a row of legs of this type is achieved in the same manner as the fitting of the three loose legs as shown in FIG. 5.

FIG. 9 shows a design of pallet in which the platform is in the shape of a framework. The pallet in FIG. 9 is expediently envisaged as being made of sheet metal material in order to achieve the required rigidity. The pallet can, as required, thus be constructed as a disposable pallet, assuming that the cargo is self-supporting; or the construction may be made so rigid that a pallet is formed with adequate carrying capacity.

In the embodiment in FIG. 9, the pallet legs are formed as parts of respective leg rows 19, 20 and 21. These leg rows are alike, and leg row 19 will therefore be described here by way of example. The leg row 19 has been made by bending out leg parts 22, 23 and 24. The bridge members 25 and 26 between the respective leg parts are expediently made of shallow U-profile in order to give increased strength.

The three leg rows 19, 20 and 21 are held together by means of connecting members 27, 28 and 29. These connecting members are also alike and are in the form of relatively shallow and broad U-profiles as may be clearly seen from FIG. 11. The connecting members 27, 28 and 29 are laid inside the bent-out leg parts 22, 23 and 24 as may be clearly seen from FIGS. 10 and 11. In the region of each leg, the individual connecting members have slots 30, 31 (FIG. 10) in the walls of the U-profile. The strip member 32 is inserted through the slots. This strip member 32 corresponds to the strip members 6 in FIGS. 1 and 5. In the respective legs there are, in the same manner, slots 33 and 34 through which the strip member 32 is threaded down and guided along the sides of the leg, bent in under the respective legs and up through slots in the respective legs as may be clearly seen from FIGS. 10 and 11.

The FIGS. 12 and 13 show a disposable pallet and differs from the embodiment in the FIGS. 1–5 in the design of the leg 36. The legs 36 are in the form of cubes made of polystyrene. Each leg 36 has a slot 37 wherein the flaps 9'' and 10'' are inserted. Between the pallet platform 1 and the leg 36 there is a reinforcing wood plank 35 which extends over the width of the pallet from leg to leg.

The invention has been shown and described above in connection with pallets but, as already mentioned the invention also covers containers provided with leg fixtures according to the invention.

Having described my invention, I claim:

1. A support for a pallet, package container and the like load-bearing structure comprising a leg which is secured to said structure by means of an elongated flat strip of material the center portion of which is connected to said structure and overlies the upper end of said leg, the outer portions of said strip extending downwardly opposite each other outside said leg, and the free ends of said strip being brought together under the foot of said leg and inserted upwardly into said leg in face-to-face contact with each other.

2. Pallet according to claim 1, characterized in that the legs are formed of bent-out parts of a long strip and in that the connecting members are in the form of shallow U-profiles with an external width to suit the internal width of the legs, and are laid inside the bent-out parts.

3. Pallet according to claim 2, characterized in that the bent-out parts and the shallow U-profiles have correspondingly inclined walls.

4. Pallet according to claim 1, characterized in that the legs are in the form of massive bodies having a slot extending from the bottom face and into the body.

5. Pallet according to claim 4, characterized in that the legs are made of a foamed cellular plastic material such as polystyrene.

6. A support according to claim 1, wherein said free ends of the strip extend the full height of said leg.

7. A support according to claim 1, wherein said leg is a hollow, upright cylinder into which the free ends of the strip are inserted.

8. A support according to claim 1, wherein the foot of said leg is provided with a slot into which said free ends are inserted.

9. A support according to claim 1, wherein the leg is parallelopipedic in shape.

10. A support according to claim 1, wherein said leg tapers towards its foot.

11. A support as claimed in claim 10, wherein the leg is in the form of a cup having a bottom wall provided with a slot through which the free ends of the strip extend.

12. A support according to claim 1, wherein the upper end of said leg is provided with a supporting flange or rim.

13. A pallet according to claim 1, wherein the structure is in the form of an open framework.

14. A pallet according to claim 13, wherein the framework is provided with at least two sets of legs each set being formed by connecting strips, said connecting strips being linked by crossmembers, the connecting strips and crossmembers being joined together at each intersection by a flat strip which secures a leg to said framework.

15. A pallet according to claim 14, wherein each leg is formed as a shaped part of its respective connecting strip, the cross members comprising channel-shaped members the outer cross-sectional shape of which corresponds to the inner shape of the upper end of the leg.

16. A pallet according to claim 1, wherein each said leg is made of a rigid synthetic plastics foam material.