



HU000034693T2

(19) **HU**(11) Lajstromszám: **E 034 693**(13) **T2****MAGYARORSZÁG**
Szellemi Tulajdon Nemzeti Hivatala**EURÓPAI SZABADALOM**
SZÖVEGÉNEK FORDÍTÁSA(21) Magyar ügyszám: **E 13 708084**(51) Int. Cl.: **B65D 77/04** (2006.01)(22) A bejelentés napja: **2013. 02. 19.**

(86) A nemzetközi (PCT) bejelentési szám:

PCT/EP 13/000477

(96) Az európai bejelentés bejelentési száma:

EP 20130708084

(87) A nemzetközi közzétételi szám:

WO 13124051

(97) Az európai bejelentés közzétételi adatai:

EP 2817241 A1 **2013. 08. 29.**

(97) Az európai szabadalom megadásának meghirdetési adatai:

EP 2817241 B1 **2017. 04. 05.**(30) Elsőbbségi adatok:
202012001726 U **2012. 02. 20.** **DE**(73) Jogosult(ak):
Mauser-Werke GmbH, 50321 Brühl (DE)(72) Feltaláló(k):
PRZYTULLA, Dietmar, 50171 Kerpen (DE)(74) Képviselő:
**Danubia Szabadalmi és Jogi Iroda Kft.,
Budapest**

(54)

Raklaptartály

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmat az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.



SZTNH-100052081

2817241

- 1 -

Pallet container

The invention relates to a pallet container according to the precharacterizing clause of Claim 1, having a thin-walled rigid inner container made of thermoplastic material for the storage and transportation of liquid or free-flowing contents, having a lattice frame, which, as supporting casing, closely encloses the inner container, and having a base pallet, on which the inner container rests and to which the lattice frame is fixed, wherein the lattice-profile supporting casing comprises crossing-over vertical and horizontal profile bars, which are connected at their crossover-joint locations by mechanical joining without any preliminary perforation of the profile bars, that is to say, for example, by means of clinching, punch riveting using a semi-tubular rivet or punch riveting using a solid rivet.

Prior art

Pallet containers are used for the transportation and storage of liquid or free-flowing, in some cases hazardous, contents. During the transportation of filled pallet containers – in particular in the case of contents with a high relative density and of the pallet containers being stacked – on poor roads – using trucks with stiff suspension, or during transportation by rail or sea, the lattice frames are subjected to considerable loading. This transportation-induced loading, on account of the stack load in the case of pallet containers being stacked, subjects the lattice frame to compressive loading in the axial direction and, as a result of sustained dynamic surge movements emanating from the liquid contents, additionally subjects the usually welded lattice frame to reversed bending loading in the radial direction. The weld connections or the weld regions of the crossover points of the vertical and horizontal lattice bars or lattice tubes are the points subject to the highest stressing. Such stressing, following a certain period of time, can result in the weld connections or the lattice tubes rupturing, and this therefore means the necessary level of reliability for stacking and transporting such pallet containers is no longer assured.

All the known pallet containers with tubular lattice frames have weld connections at the crossover points of the tubular bars; in the case of some pallet containers, for the purpose of relieving the weld regions of loading, bending points which are elastic to a limited extent are formed in the tubular bars alongside the weld spots.

Pallet containers with a welded tubular lattice frame are known in general, for example from EP 0 734 967 A (Sch). The tubular lattice frame of the pallet container known from this document comprises a round-tube profile which, at the welded crossover points, is indented to a pronounced extent in the form a hollow and therefore, with the tubes crossed over, forms four points of contact for the mutual welding. The bending points which are elastic to a limited extent are produced by way of additional depressions of the weld-hollow end regions.

EP 0 755 863 A1 (Fust) discloses another pallet container, of which the lattice bars have a square-tube profile which is pushed in partially to a slight extent, merely in the crossover region, for better welding and thus forms the four points of contact for the welding. The tube profile otherwise, over its entire length between the crossover points, has a constant cross section without any concavities.

DE 196 42 242 A1 (Rot) discloses a further pallet container, having a lattice frame made of open trapezoidal profile bars and a profile which is constant over the length of each bar. The four weld spots at the crossover points are achieved here by the outwardly flattened planar surfaces of the profile bars.

Another pallet container having a continuous tube profile throughout is known from US 6,244,453 B1 (Mam). The four weld spots at the crossover points of the bars are achieved here by the continuous two-sided or four-sided square-profile depressions with longitudinal ribs on the outside.

EP 1 289 852 (Mau) discloses a further pallet container, of which the lattice bars have a trapezoidal tube profile and four weld spots in the crossover region. Concavities, which act as predetermined bending points, are made, in the region alongside the crossover points of the tubular bars, on that side of the tubes which is located opposite the weld region.

Another pallet container having four weld spots in the crossover region of the tubular bars is known from EP 1 618 047 B1 (Mau). The elasticity behavior of the tubular lattice frame is achieved here by a reduction in the cross-sectional height of the tubes between or outside the welded crossover points.

DE 10 2010 033 738 A1 (R. Bu) describes a particular pallet container, of which the metal cage is characterized in that the profile bars of the metal cage are fixed by punch riveting, TOX clinching or clinching in the form of a force-fitting and form-fitting joining connection.

Another pallet container with spot-weld connections and clinched connections between the ends of the vertical profile bars of the lattice-profile supporting casing and the upper horizontal profile bar is also known from DE A 10 2005 031 940 (Sch).

Finally, EP 0 916 592 A1 (vL) discloses a pallet container in which the vertical and horizontal tubular bars have different diameters and are connected to one another by the tubular bars of the larger diameter being perforated on a preliminary basis at the crossover points and the tubular bars of the smaller diameter being fitted through the bores in the tubular bars of the larger diameter. This makes it possible for the tubular bars also to be welded to one another, in addition, in the region of their crossover points.

Disadvantages of the prior art

The hitherto known tubular lattice frames having a uniform lattice-tube profile throughout and two or four weld spots at the crossover points all have the disadvantage that the horizontal and vertical tubular lattice bars are overall too flexurally and torsionally rigid in the face of reversed bending stress which occurs during transportation of filled pallet containers. Even after a comparatively short period of stressing, this results in fatigue cracks and rupturing of the bars, in particular in the vicinity of the welded crossover points of the lattice bars, or the weld spots of the crossover points rupture and break off.

In the case of double stacking of pallet containers, in particular the attachment between the upper horizontal profile bar and the vertical profile bars is a weak point.

Those tubular lattice frames having welded round tubes with four weld spots, e.g. known from EP 0 734 967 A2 (Sch), and having a considerably reduced cross-sectional height of the tubes in the region of

the crossover points (no continuous tube profile, indentations of the same depth overall and/or a reduced cross-sectional height of the tubes at the crossover points of the bars) have the disadvantage that considerable loading peaks occur in these regions of reduced tube cross section and, as a result, predetermined breaking or buckling points are, as it were, pre-programmed e.g. in the case of drop tests, in the case of hydraulic internal pressure tests and in the case of reversed bending stress due to transportation-induced loading.

Those known tubular lattice frames having four weld spots in the crossover region of the tubular bars and adjacent problematic predetermined bending points or predetermined bending regions – known from EP 1 289 852 and EP 1 618 047 – have the disadvantage that the tubular-bar regions are not subjected to uniform loading and it is only the regions of reduced tubular-bar cross section which have to absorb the reversed bending stress due to transportation-induced loading.

It is necessary, in principle, for all the tubular bars of the tubular lattice frames with predetermined bending points in the starting profile to be over-dimensioned, because it is only the reduced tubular-bar cross-sectional height of the predetermined bending points which absorbs the reversed bending stress, but this reduces the static loading capability of the tubular lattice frame as a whole.

All the known pallet containers having welded tubular lattice frames or having welded wire lattices as a supporting casing have the following disadvantages:

The welding method used is resistance welding, a straightforward welding method with a high level of energy consumption; not all materials can be welded by resistance welding and, during long periods of transportation, the bending surge loading which occurs can result in the weld seams rupturing.

Those tubular lattice frames having spot-weld connections and a further clinch connection between the ends of the vertical profile bars of the lattice-profile supporting casing and the uppermost horizontal profile bar – known for example from DE 10 2005 031 940 – quite apart from involving disadvantageous spot-welding, do not have any additional mechanical form-fitting connections at the other crossover points of the vertical and horizontal profile bars of the tubular lattice frame.

Those known tubular lattice frames made of cage-forming bar profiles which form so-called joining connections by punch riveting, TOX clinching or straightforward clinching have the following disadvantages:

If the profiles used for the tubular lattice frame are conventional ones with a bar width of 15 to 25 mm, the size or dimensions of the joining connection means that it is possible to realize only one joining connection, or a maximum of two joining connections, at each crossover point of the tubular lattice frame, and these joining connections have to absorb the same forces as in the case of a pallet container having a tubular lattice frame with a continuous lattice-tube profile and four weld spots at the crossover points. If use is made of a lattice-tube profile made of a non-metallic material, then the mechanical load-bearing capability of the joining connection is reduced further on account of the poor physical characteristics of the non-metallic material.

The disadvantage with fixing the profile bars of the metal cage solely by punch riveting, TOX clinching or clinching in the form of a force-fitting and form-fitting joining connection, as in DE 10 2010 033 738 A1 (R.

Bu.), is that these joining connections alone have to absorb all the reversed bending stress and shear forces (stack load) which occur. In the case of sustained stressing, this can easily result in overloading.

If the tubular lattice frame is made up of tubular bars and the tubular bars are connected by one of the tubular bars being perforated on a preliminary basis and the second one being pushed through said perforation (EP 0 916 592 A1, vL), flexurally rigid tubes of large diameter are disadvantageously weakened to a pronounced extent precisely at the crossover points as a result of perforations being made and/or of the removal of tube-wall material in the perforation region. In addition, installation which involves individual tubular bars being fitted one inside the other gives rise to an unreasonably high level of production outlay.

Object

It is an object of the present invention to specify a pallet container of the type in question which has a lattice-profile supporting casing made of fixed profile bars and no longer has the disadvantages of the prior art -- account being taken of the stack load caused by a filled pallet container stacked on top (double stacking) in addition to the conventional surge loading caused by the liquid content during transportation.

Achieving the object

This object is achieved according to the invention by a pallet container having the features of Patent Claim 1. Dependent claims contain advantageous and expedient developments of the invention.

The pallet container for liquids according to the invention having a lattice-profile supporting casing, which, as supporting casing, closely encloses the inner container, and having a base pallet, on which the inner container rests and to which the lattice-profile supporting casing is fixed, wherein the lattice-profile supporting casing, which may be rigid or collapsible, comprises vertical and horizontal profile bars which are fixed to one another at the crossover points, is distinguished by the following advantages:

There is no welding at all the connecting locations of the lattice-profile supporting casing, connection takes place by mechanical joining, it is also possible to connect profiles consisting of materials which cannot be subjected to resistance welding, it is possible for example for profile bars made of steel, aluminum, composite materials and plastic to be connected to one another, the connecting zone is not influenced thermally in any way and mechanical joining, by having a lower level of energy consumption, is more cost-effective. The profile bars may have different wall thicknesses and be configured in the form of a bar profile, shaped profile or hollow profile. The mechanical joining connections can also be produced without any preliminary perforations, with accessibility on one side. Mechanical joining connections have high dynamic load-bearing capabilities.

In addition, the profile bars are locked in relation to one another at their crossover points by a mechanical form fit, and are supported mechanically at the lattice-profile crossover joints of the upper and lower horizontal profile bar, in order to relieve the clinch or punch riveting joining connections of loading. In the case of a mechanical joining connection per lattice-profile crossover joint, in particular in the case of foldable or collapsible lattice-profile supporting casings comprising separate side parts, this mechanical form fit also reinforces the design strength thereof.

In the case of double stacking of the pallet containers, the stack load caused by the pallet container stacked on top has to be absorbed by the upper horizontal profile bar of the lattice-profile supporting casing and transferred to the base pallet via the vertical profile bars and the lower horizontal profile bar. The punch rivet, clinch rivet or clinch-joining connections are effectively relieved of the stack loading here by additional bearing surfaces on the upper and lower lattice-profile crossover joints.

In one embodiment of the invention, the lattice-profile supporting casing of a pallet container may be of collapsible or foldable configuration. With the same surface area at the base, the pallet-container height here is reduced to approximately 1/3 of the original height. The advantage with this configuration is that the reduced volume of the collapsed pallet container makes it possible for the transportation costs and the costs for storing the pallet container without an inner container inserted therein to be reduced to a considerable extent.

The invention will be described and explained in more detail hereinbelow with reference to exemplary embodiments which are illustrated schematically in the drawings, in which:

- figure 1 shows a front view of a pallet container according to the invention,
- figure 2 shows a side view of a pallet container according to the invention,
- figure 3 shows a view of a double-stacked pallet container according to the invention,
- figure 4 shows a view of a lattice-profile crossover point according to the invention (18 in figure 2),
- figure 5 shows a section A-B through a vertical profile bar from figure 4,
- figure 6 shows a section C-D through a lattice-profile crossover point in figure 4 with a mechanical joining connection produced by clinching,
- figure 7 shows a section C-D through a further lattice-profile crossover point from figure 4 with a mechanical joining connection produced by punch riveting using a semi-tubular rivet,
- figure 8 shows a section C-D through a further lattice-profile crossover point from figure 4 with a mechanical joining connection produced by punch riveting using a solid rivet,
- figure 9 shows a section E-F through a horizontal profile-bar bearing means from figure 4,
- figure 10 shows a section E-F through a horizontal profile-bar mount from figure 4,
- figure 11 shows a section E-F through a further horizontal profile-bar mount from figure 4,
- figure 12 shows a view of an upper lattice-profile crossover joint (24 in figure 2),
- figure 13 shows a standard profile-bar connection, upper horizontal/vertical profile bar, in accordance with section G-H in figure 12,
- figure 14 shows a profile-bar connection according to the invention, upper horizontal/vertical profile bar, in accordance with section G-H from figure 12,
- figure 15 shows a further profile-bar connection according to the invention, upper horizontal/vertical profile bar, in accordance with section G-H from figure 12,

- figure 16 shows a further profile-bar connection according to the invention, upper horizontal/vertical profile bar, in accordance with section G-H from figure 12,
- figure 17 shows a view of lattice-profile crossover joint according to the invention at the bottom (26 in figure 2),
- figure 18 shows a standard profile-bar connection, lower horizontal/vertical profile bar, in accordance with section I-J from figure 17,
- figure 19 shows a profile-bar connection according to the invention, lower horizontal/vertical profile bar in accordance with section I-J from figure 17,
- figure 20 shows a further profile-bar connection according to the invention, lower horizontal/vertical profile bar, in accordance with section I-J in figure 17, and
- figure 21 shows a further profile-bar connection according to the invention, lower horizontal/vertical profile bar, in accordance with section I-J from figure 17.

Figure 1 illustrates a front view of a pallet container 10 according to the invention having a thin-walled rigid inner container 12 made of thermoplastic material, having a lattice-profile supporting casing 14 and having a base pallet 16 (pallet width 1000 mm). Figure 2 shows a side view of the pallet container 10 (pallet length 1200 mm).

Figure 3 shows a double-stacked pallet container 10 according to the invention. This type of stacking is conventional during transportation for example by truck or in sea-going freight containers in accordance with ISO 668. In the case of double stacking, the lattice-profile supporting casing 14 of the pallet container 10 stacked underneath is subjected to loading during transportation not just by the surge forces caused by its contents (radial loading), but also by the weight of the pallet container 10 stacked on top (axial loading).

Figure 4 shows a lattice-profile crossover point 18 of the lattice-profile supporting casing 14 according to the invention formed by two U-shaped bar profiles 28 according to Figure 5. Sections C-D from figures 4, 12 and 17 show the horizontal 22 and vertical 20 profile bars with their mechanically joined connection. The sections C-D in figures 4, 12 and 17 are the same; the mechanical joining connections can be made in accordance with figures 6, 7 and 8.

Figure 6 shows a mechanical joining connection between the U-shaped vertical 20 and horizontal 22 profile bars produced by means of clinching. The mechanical clinch connection is achieved by material being pushed in and displaced from the clinch cavity region 30 of the horizontal profile bar 22 and by subsequent insertion and pressing operations in the clinch-joining region 32 of the vertical profile bar 20. It is advantageous with this mechanical joining connection that there is only a low level of energy consumption and the joining zone is not influenced thermally in any way.

Figure 7 shows a further mechanical joining connection according to the invention between the U-shaped vertical 20 and horizontal 22 profile bars. The mechanical joining connection is made by the semi-tubular rivet

34, which forms the semi-tubular-rivet joining region 36 by punch riveting and thus permanently connects the vertical 20 and horizontal 22 profile bars.

A further mechanical joining connection according to the invention is the punch riveting method using a solid rivet 38, that has been illustrated in figure 8. The mechanical joining connection between the profile bars 20 and 22 is produced by the solid punch rivet 38 and by the displacement of material into the joining region 40 of the solid punch rivet 38. Punch riveting using a solid rivet 38 takes place, as with punch riveting using the semi-tubular rivet 34, without preliminary drilling and is therefore straightforward to automate.

Figures 9, 10 and 11 show the horizontal profile bar 22 bearing on the vertical profile bar 20 at a lattice-profile crossover point 18 of the lattice-profile supporting casing 14 according to the invention, wherein the horizontal profile bar 22 is additionally fixed in a form-fitting manner in the vertical profile bar 20 via the accommodating groove 42 in figure 10 or via the punched-out centering means 43 in figure 11.

The view of a lattice-profile crossover joint according to the invention at the top 24 of the lattice-profile supporting casing 14 is illustrated in figure 12, wherein the mechanical clinch or punch riveting joining connection between the upper horizontal profile bar 22 and the vertical profile bar 20 can be made as illustrated in figures 6, 7 and 8 in section C-D.

Figures 13, 14, 15 and 16 show the upper horizontal profile bar 22 butting against/bearing on the vertical profile bar 20, wherein the horizontal profile bar 22 is supported via the shoulder 44 in figure 15 or via the punched-out lower centering means 43 in figure 14. Figure 16 shows a modified U-shaped upper horizontal profile bar 22 with a bearing limb 45, which performs the task of providing support on the vertical profile bar 20. Figure 13 illustrates the horizontal profile bar 22 bearing on the vertical profile bar 20 without any vertical support.

The view of a lattice-profile crossover joint according to the invention at the bottom 26 is illustrated in figure 17, wherein the mechanical clinch or punch riveting joining connection between the horizontal profile bar 22 and the vertical profile bar 20 can take place as illustrated in figures 6, 7, and 8 in section C-D.

Figures 18, 19, 20 and 21 show the vertical profile bar 20 butting against/bearing on the lower horizontal profile bar 22, wherein the vertical profile bar 20 additionally bears, in figure 20, on a T-shaped lower horizontal profile bar 22 with a bearing limb 47 or, in figure 19, on a punched-out shoulder 46. Figure 21 shows an L-shaped lower horizontal profile bar 22 with two bearing regions 48, which perform the function of supporting the vertical profile bar 20. Figure 18 shows the horizontal profile bar 22 butting against the vertical profile bar 20 without any additional vertical support for the vertical profile bar 20.

List of designations

10	Pallet container
12	Inner container
14	Lattice-profile supporting casing
16	Base pallet
18	Lattice-profile crossover point
20	Vertical profile bar

22	Horizontal profile bar
24	Lattice-profile crossover joint at the top
26	Lattice-profile crossover joint at the bottom
28	U-shaped bar profile
30	Clinch cavity
32	Clinch joining region
34	Semi-tubular rivet
36	Semi-tubular-rivet joining region
38	Solid punch rivet
40	Solid-punch-rivet joining region
42	Accommodating groove for horizontal profile bar
43	Punched-out centering means
44	Bearing region for horizontal profile bar
45	Bearing limb
46	Punched-out shoulder of vertical profile bar
47	Bearing limb
48	Bearing region for vertical profile bar

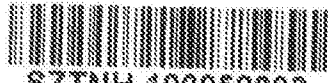
Raklaptartály

SZABADALMI IGÉNYPONTOK

1. Raklaptartály (10) egy hőre lágyuló műanyagból készült, vékony falú belső tartállyal (12) folyékony vagy folyóképes töltőanyagok tárolására és szállítására, egy a belső tartályt (12) támasztóköpenyként szorosan körülvevő rácsprofilú támasztóköpennyel (14) és egy alapraklappal (16), amelyen a belső tartály (12) felfekszik és amellyel a rácsprofilú támasztóköpeny (14) szilárdan össze van kötve, ahol a rácsprofilú támasztóköpeny (14) egymást keresztező függőleges profilrudakat (20) és vízszintes profilrudakat (22) tartalmaz, amelyek a keresztillesztési helyeiken (24, 26) a profilrudak (20, 22) előlyukasztása nélküli mechanikus illesztéssel, tehát például peremezéssel, félcsöves szegeccsel (34) végzett stancoló szegeccseléssel vagy teljes szegeccsel (38) végzett stancoló szegeccseléssel vannak egymással összekötve, **azzal jellemezve, hogy**
- az egymást keresztező függőleges profilrudak (20) és vízszintes profilrudak a keresztezési pontjaikban mechanikus alakzárással alakzáró módon szilárdan vannak egymással összekötve és ezáltal mechanikus reteszelés révén elfordulás ellen biztosítottan vannak rögzítve, ahol a függőleges profilrudak (20) a vízszintes profilrudak (22) felé néző oldalukon a keresztezési pontjaikban (18) rendre egy a mechanikus alakzáráshoz deformált felfekvési tartománnyal (42, 43) rendelkeznek, valamint – mindenkori elhelyezkedésükre vonatkoztatva a rácsprofilú támasztóköpenyben (14) – a függőleges profilrudak (20) a vízszintes profilrudak (22) felé néző oldalukon vagy a vízszintes profilrudak (22) a függőleges profilrudak (20) felé néző oldalukon rendre egy az illesztő kötéseknek a keresztillesztési helyek (24, 26) tartományában való tehermentesítésére szolgáló deformált felfekvési tartománnyal (42, 43, 44, 45, 46, 47,



- 48) rendelkeznek, és járulékosan a profilrudak (20, 22) a keresztezési pontjaikban (18) a profilrudak (20, 22) előlyukasztása nélküli mechanikus illesztéssel, tehát például peremezéssel, félcsőves szegéccsel (34) végzett stancoló szegéccsel vagy teljes szegéccsel (38) végzett stancoló szegéccsel vannak egymással összekötve.
2. Az 1. igénypont szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) profilrúdjainak (22, 20) mechanikus alakzárása a profilrudak keresztezési pontjaiban (18) a vízszintes profilrudaknak (22) a függőleges profilrudak (20) befogadó homyaiban (42) való felfekvése révén van megvalósítva.
 3. Az 1. vagy 2. igénypontok szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) profilrúdjainak (22, 20) mechanikus alakzárása a profilrudak keresztezési pontjaiban (18) a vízszintes profilrudaknak (22) a függőleges profilrudak (20) kistancolt központosításaiban (43) való elhelyezése révén van megvalósítva.
 4. Az 1., 2. vagy 3. igénypont szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) felső vízszintes profilrúdjának (22) felfekvése a felső rácsprofil-keresztüllesztéseknél (24) a függőleges profilrudakra (20) a függőleges profilrudak (20) vállain (44) vagy kistancolt alsó központosításain (43) keresztül van megvalósítva.
 5. Az előző 1-4. igénypontok bármelyike szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) felső vízszintes profilrúdjának (22) felfekvése a felső rácsprofil-keresztüllesztéseknél (24) a függőleges profilrudakra (20) a vízszintes profilrúd (22) egy vállán (44) keresztül van megvalósítva.
 6. Az előző 1-5. igénypontok bármelyike szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) függőleges profilrúdjainak (20) felfekvése az alsó rácsprofil-keresztüllesztéseknél (26) az alsó vízszintes profilrúd (22) egy felfektető szárán (47) van megvalósítva.
 7. Az előző 1-6. igénypontok bármelyike szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) függőleges profilrúdjainak (20) felfekvése az alsó rácsprofil-keresztüllesztéseknél (26) az alsó vízszintes profilrudon (22) lévő kistancolt vállakon (46) keresztül van megvalósítva.
 8. Az előző 1-7. igénypontok bármelyike szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) profilrúdjai (20, 22) különböző anyagokból és/vagy különböző keresztmetszeti profilokból, mint például rúdprofilból, alakos profilból vagy üreges profilból állnak.
 9. Az előző 1-8. igénypontok bármelyike szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) függőleges és/vagy vízszintes profilrúdjai (20, 22) folyamos profillal rendelkeznek.
 10. Az előző 1-9. igénypontok bármelyike szerinti raklaptartály (10), **azzal jellemezve**, hogy a rácsprofilú támasztóköpeny (14) külön oldalrészekből áll, amelyek összeecsukhatóan vagy összehajthatóan vannak kialakítva.



SZTNH-100052083

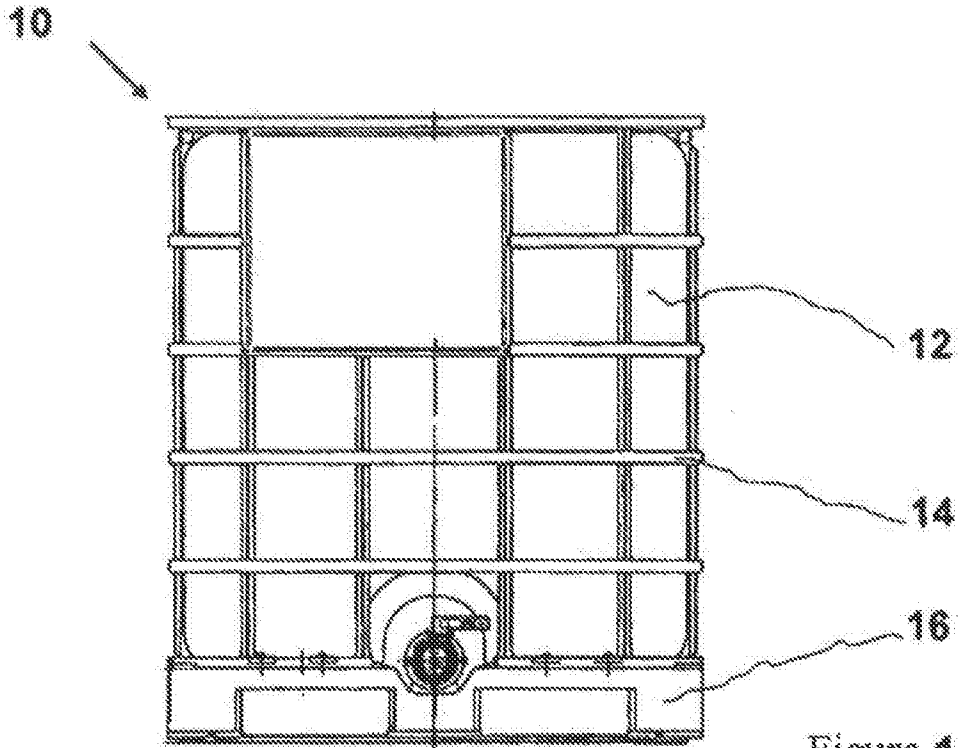


Figure 1

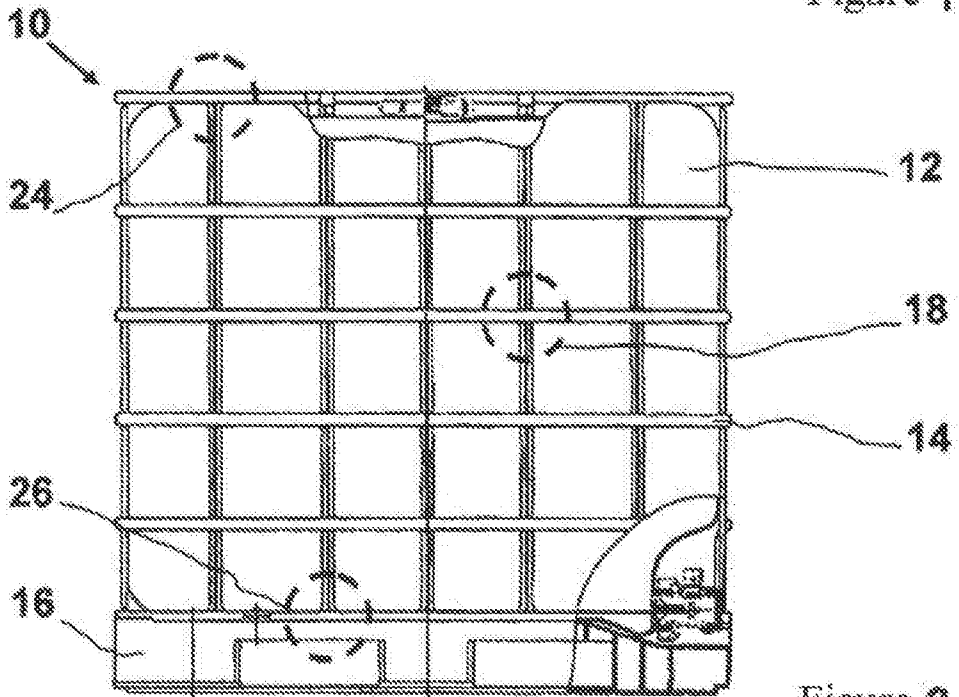


Figure 2

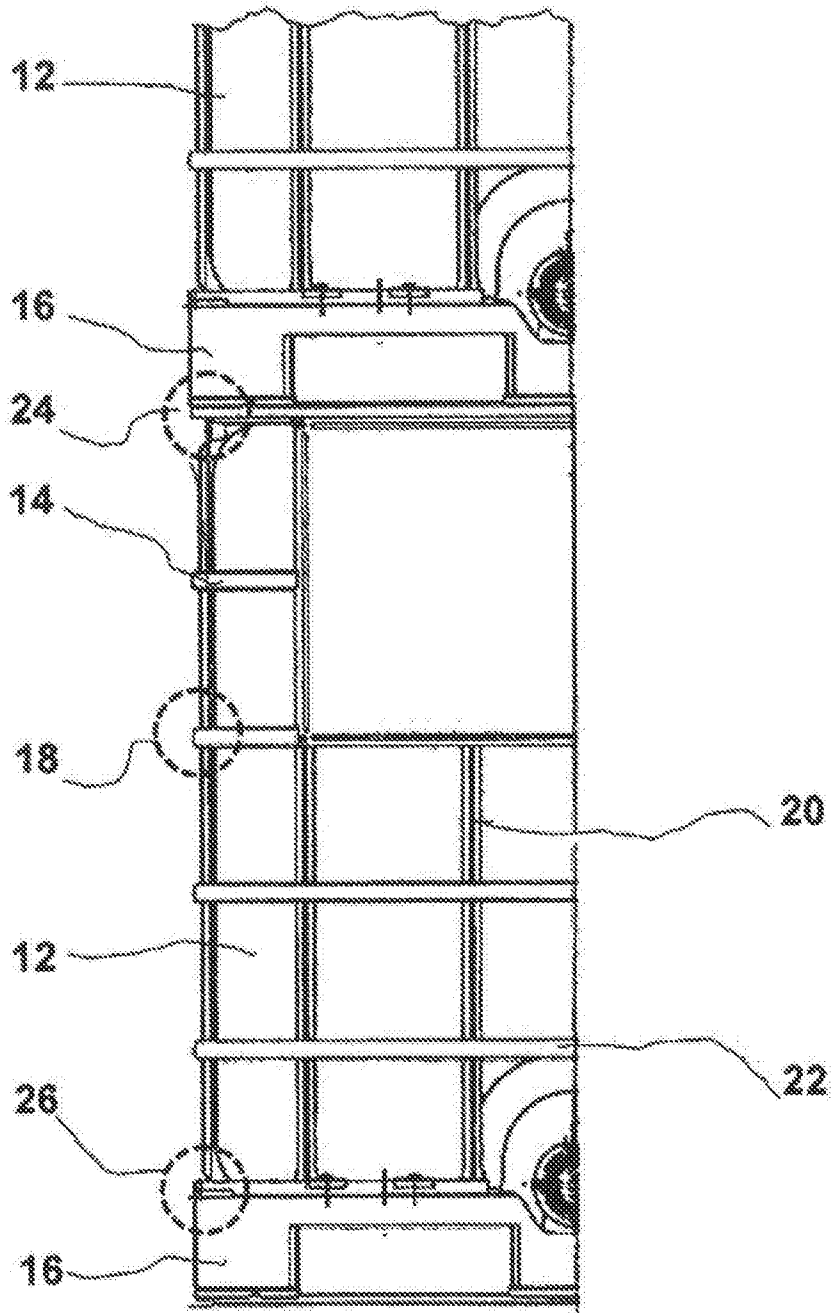


Figure 3

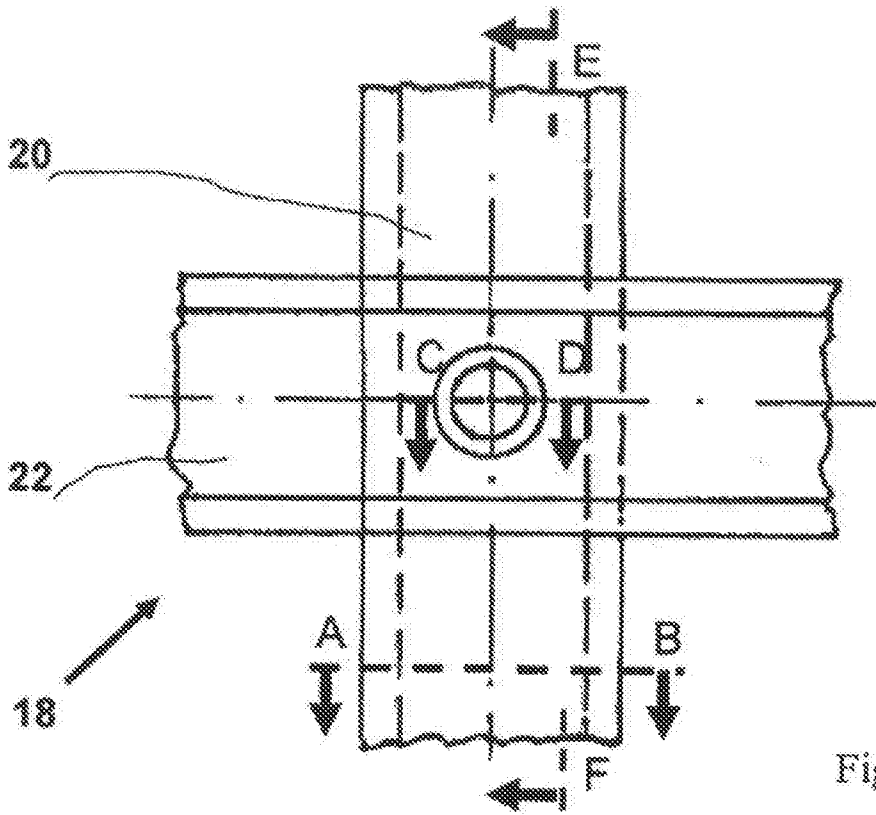


Figure 4

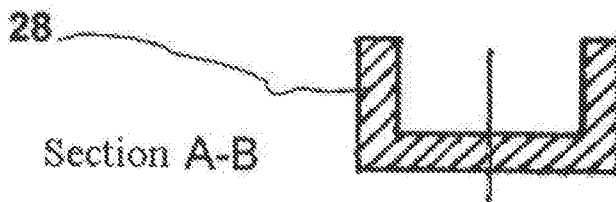


Figure 5

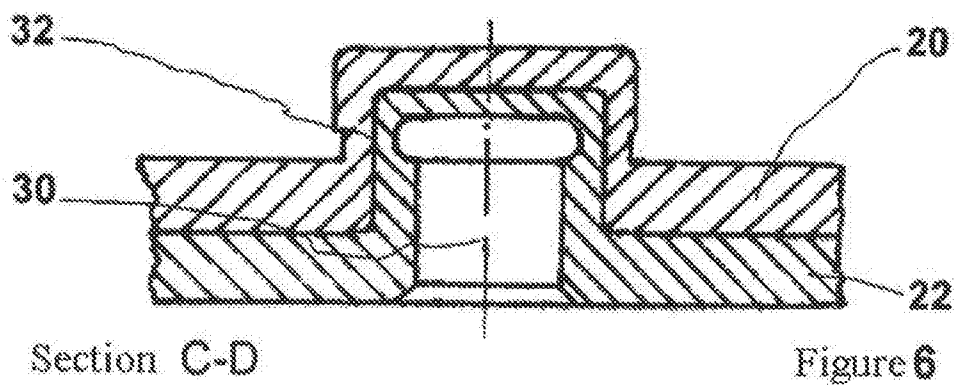


Figure 6

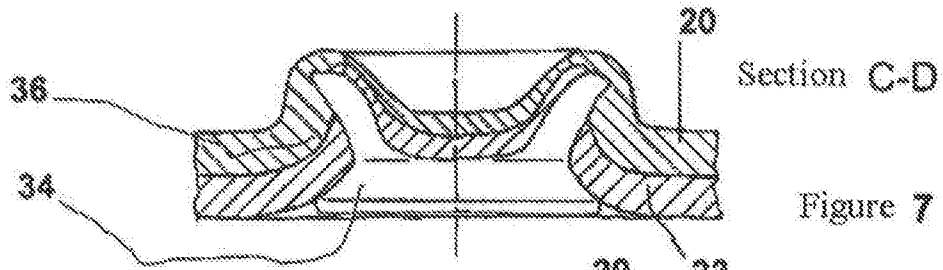


Figure 7

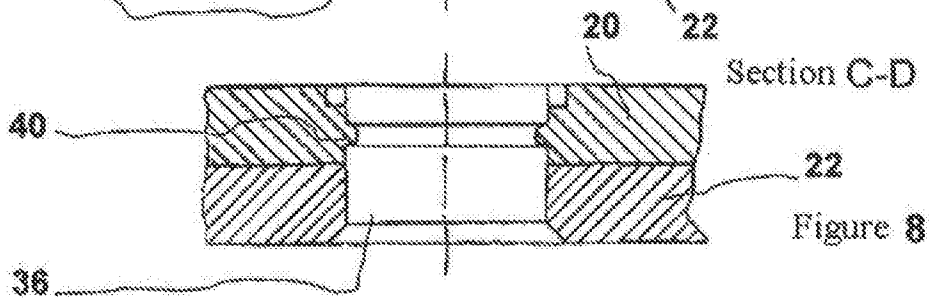
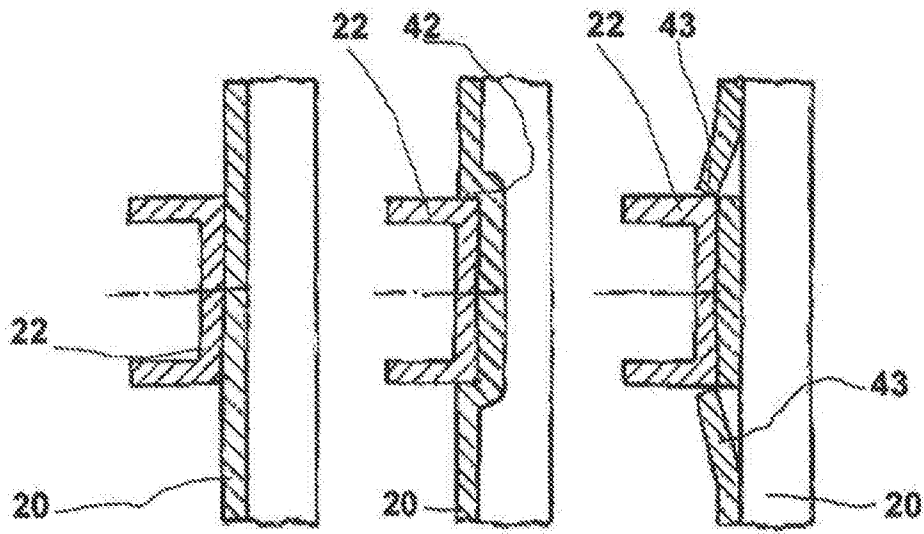


Figure 8

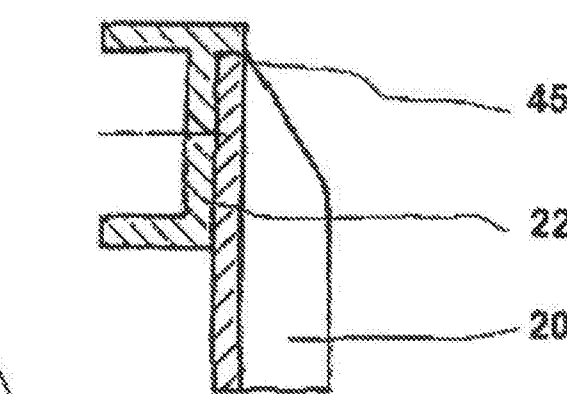
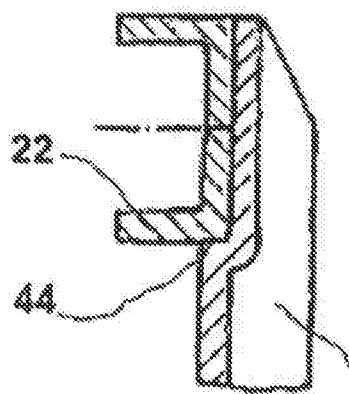
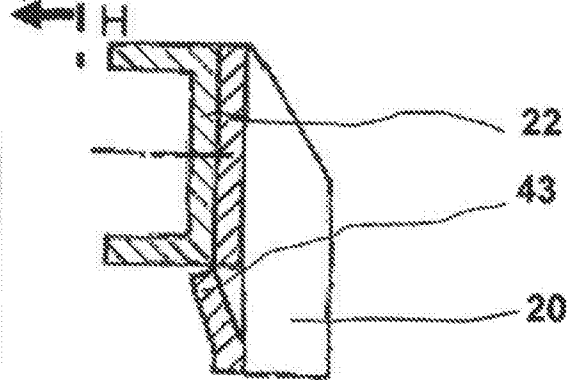
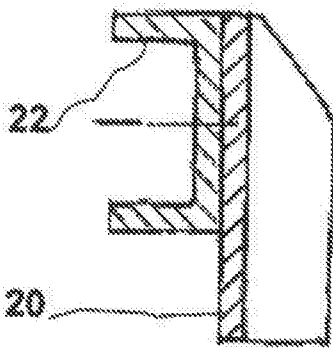
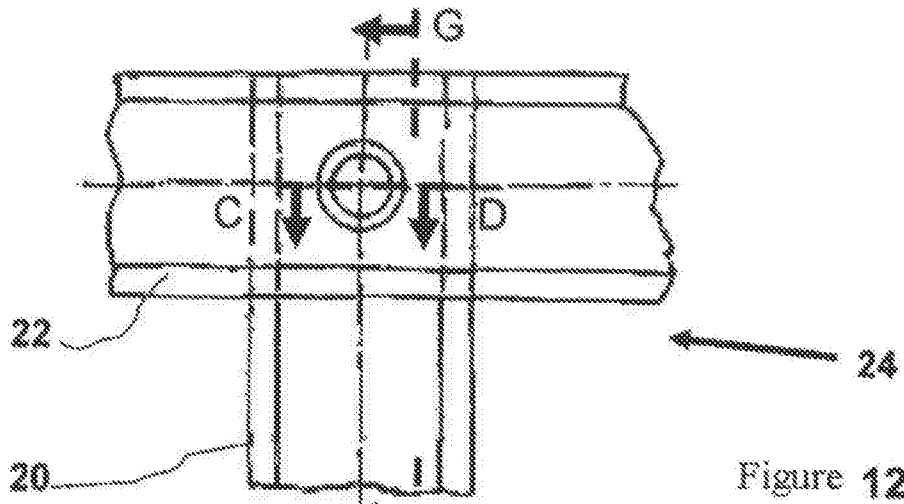


Section E-F

Figure 9

Figure 10

Figure 11



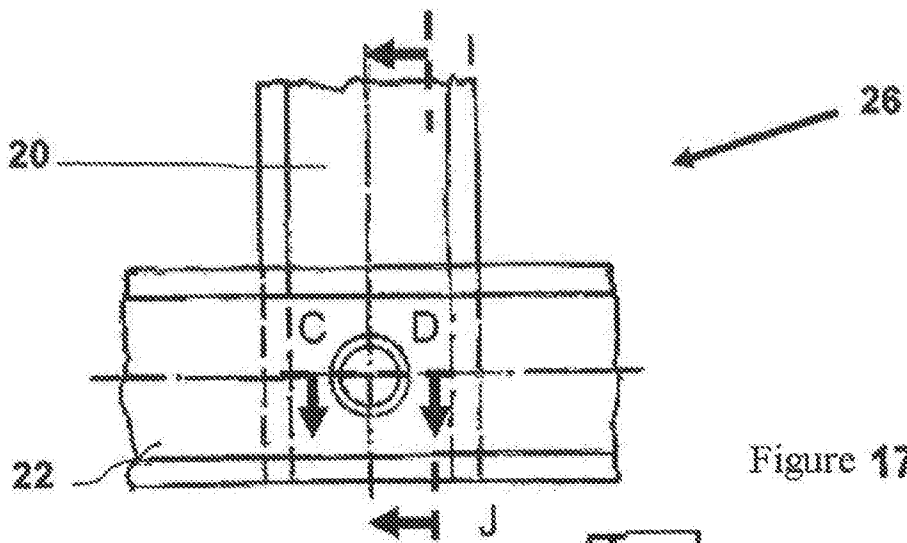


Figure 17

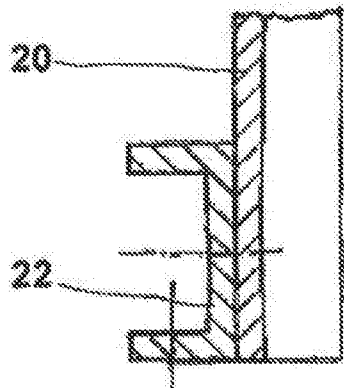


Figure 18

Section I-I

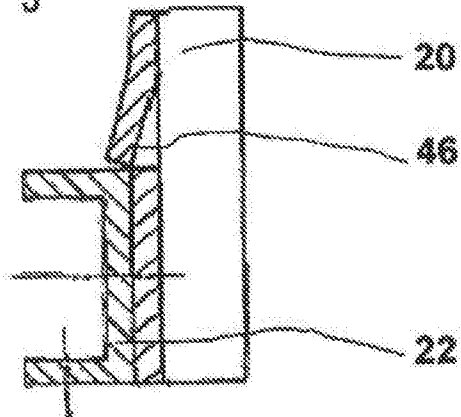


Figure 19

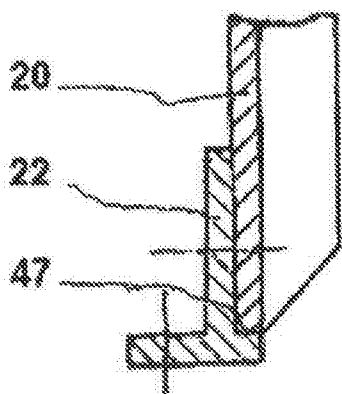


Figure 20

Section I-I

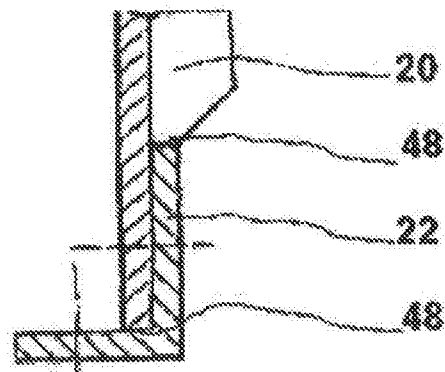


Figure 21